RESULTS OF AN ARCHAEOLOGICAL SURVEY OF THE SOUTHERN REGION OF MORETON BAY AND OF MORETON ISLAND (1963-1964)

by

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[Fiji]

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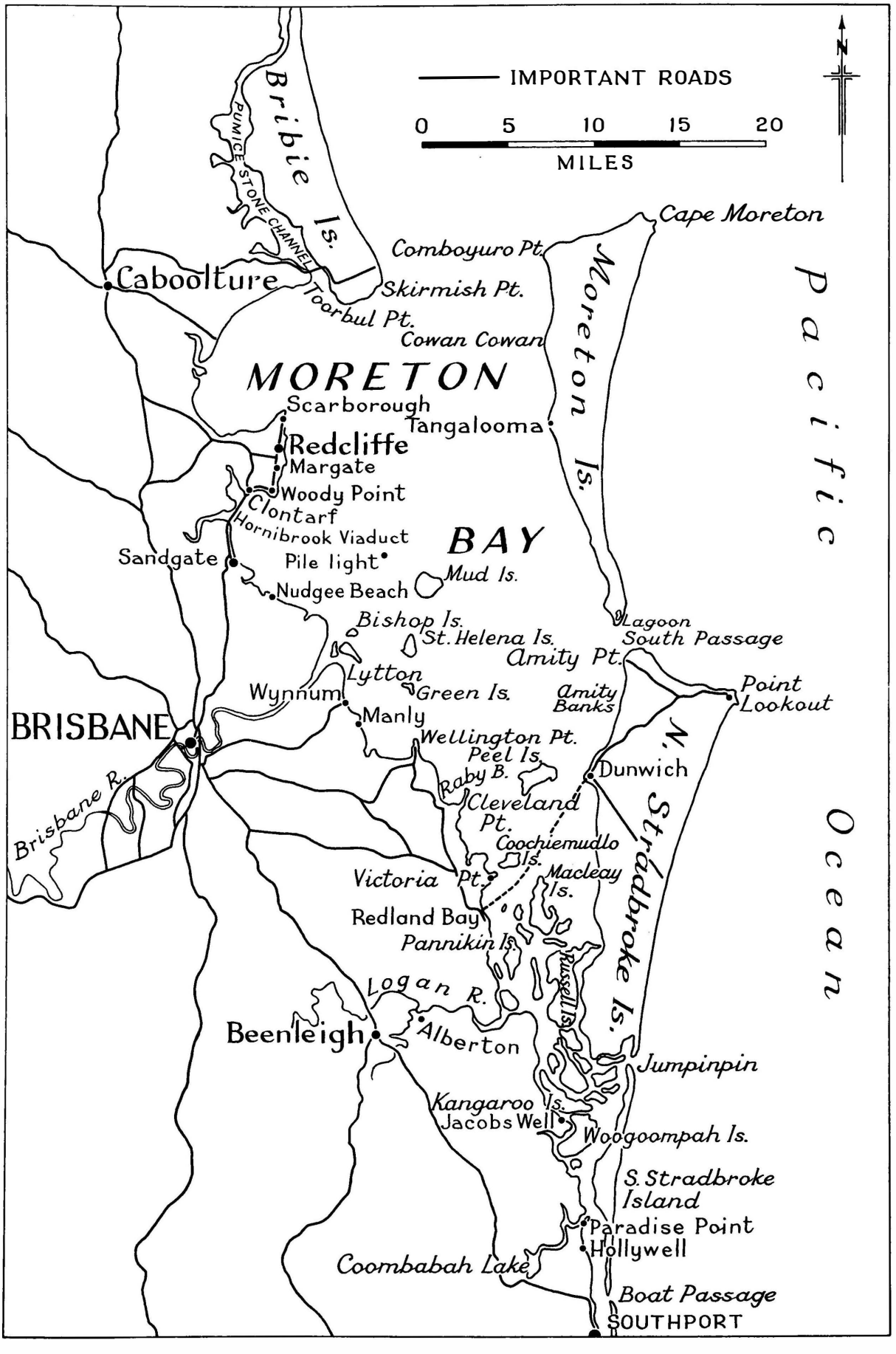

Plate 1. A modern map of Moreton Bay.

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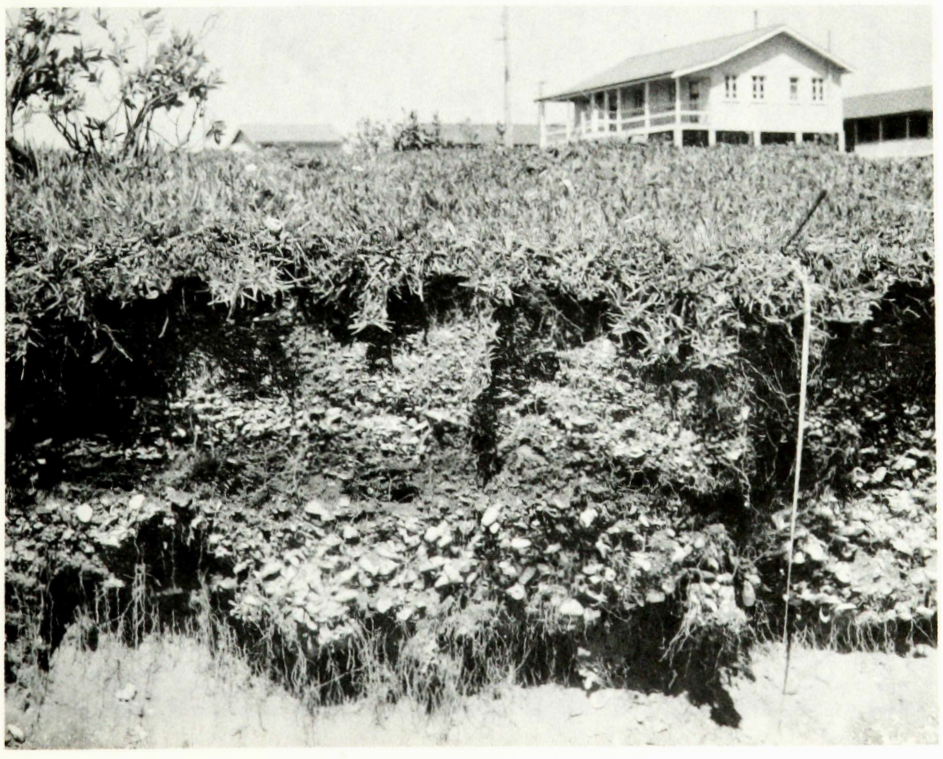

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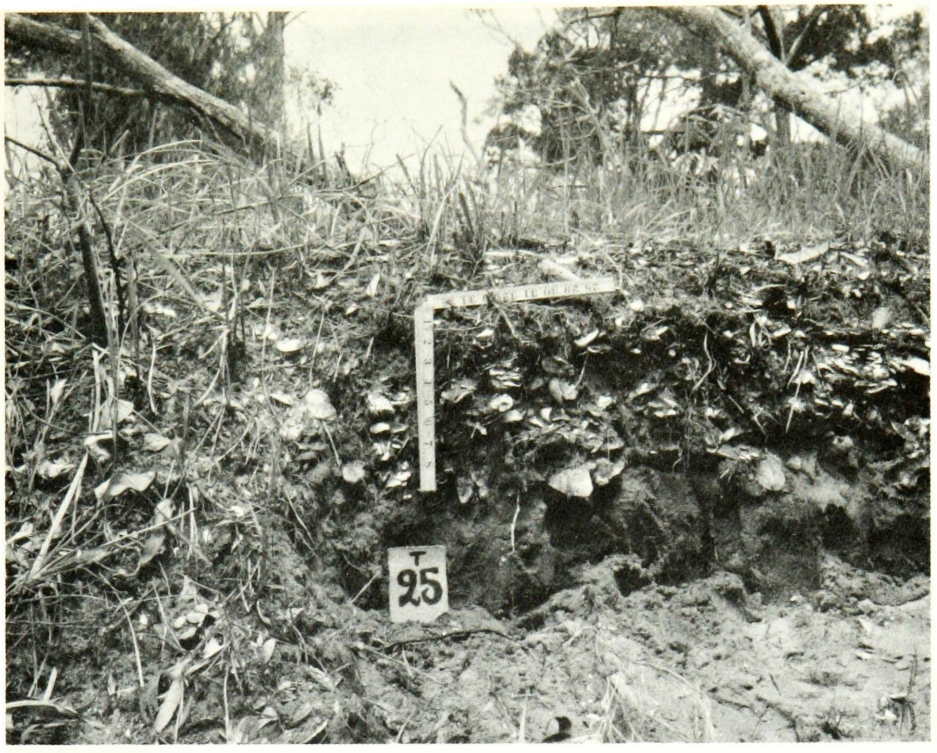

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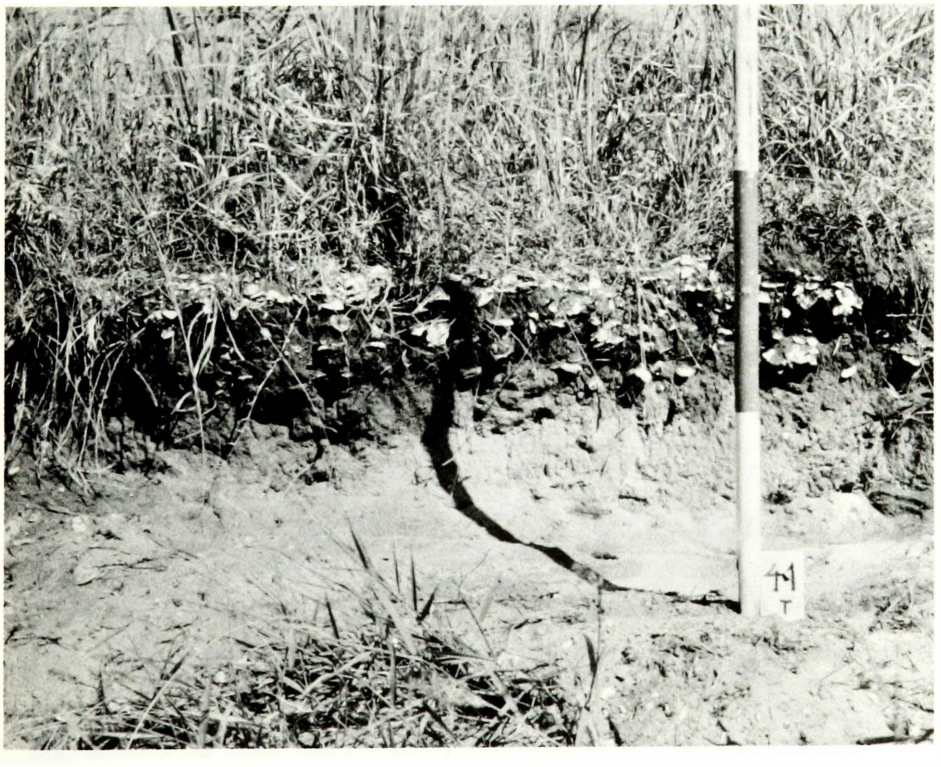

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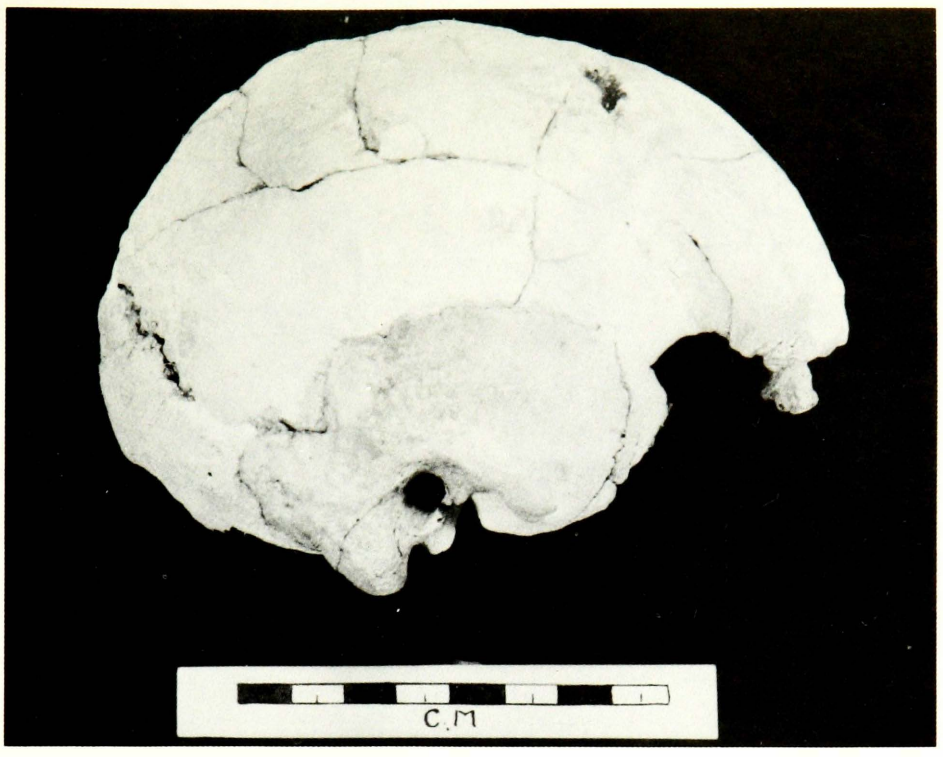

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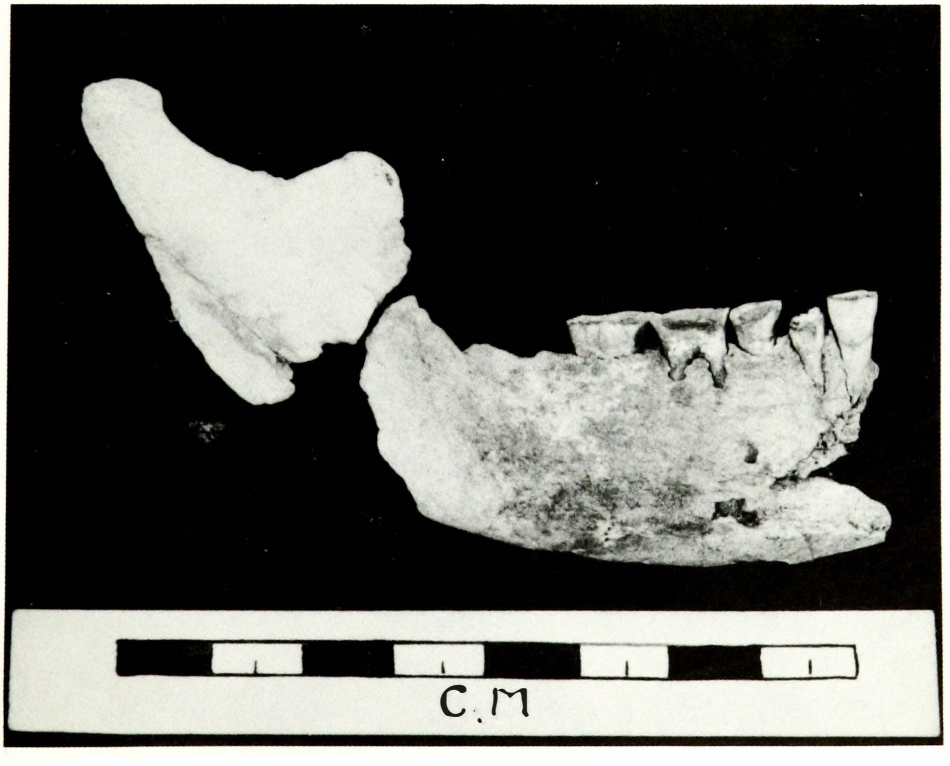

Fig. II

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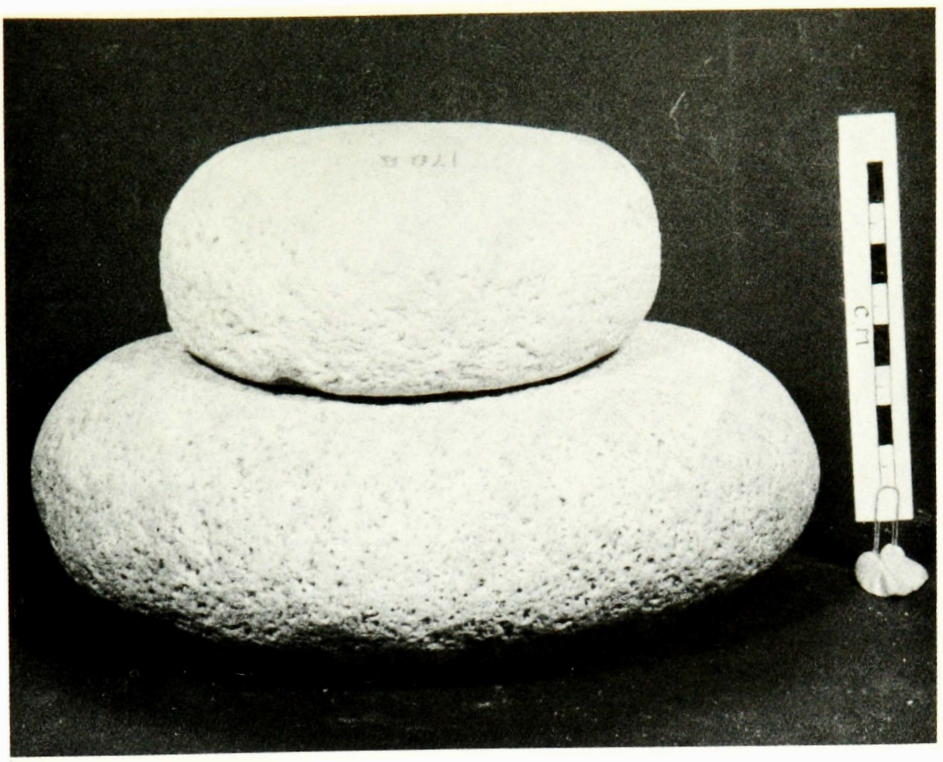

Fig. I

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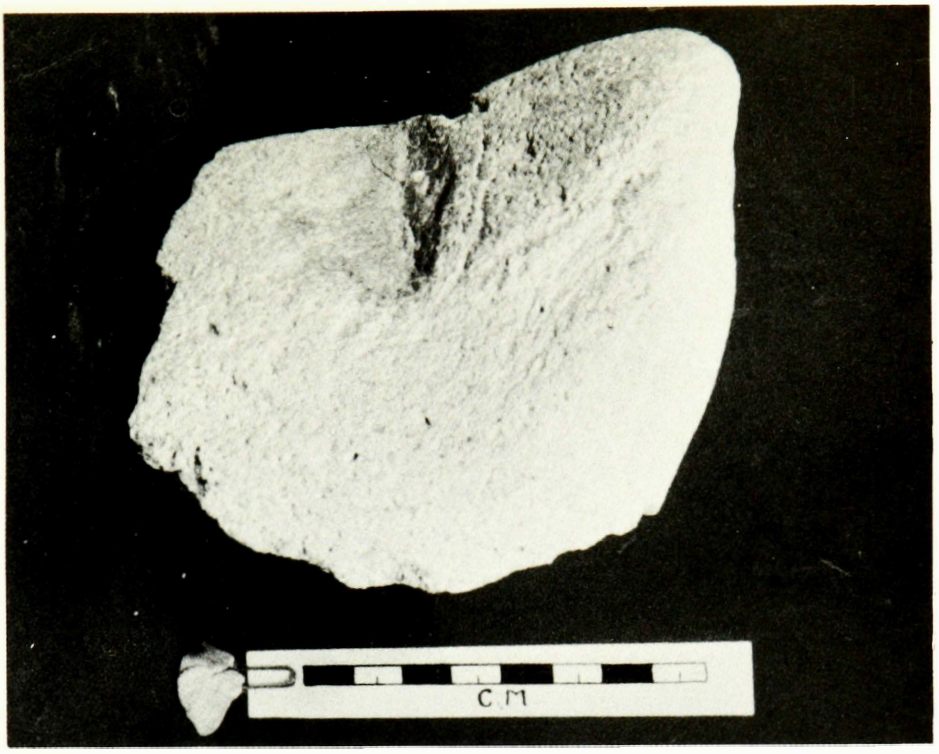

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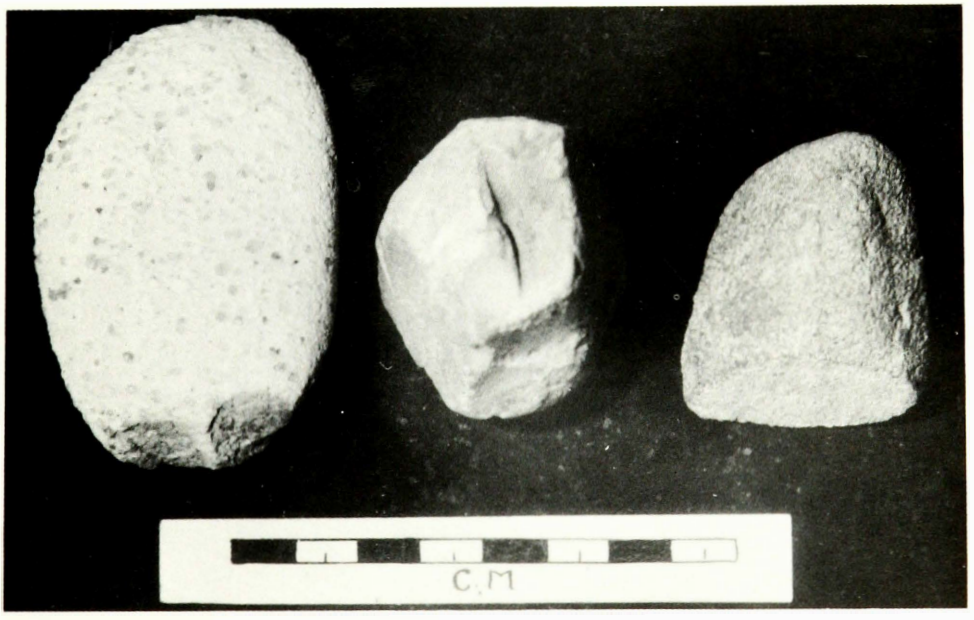

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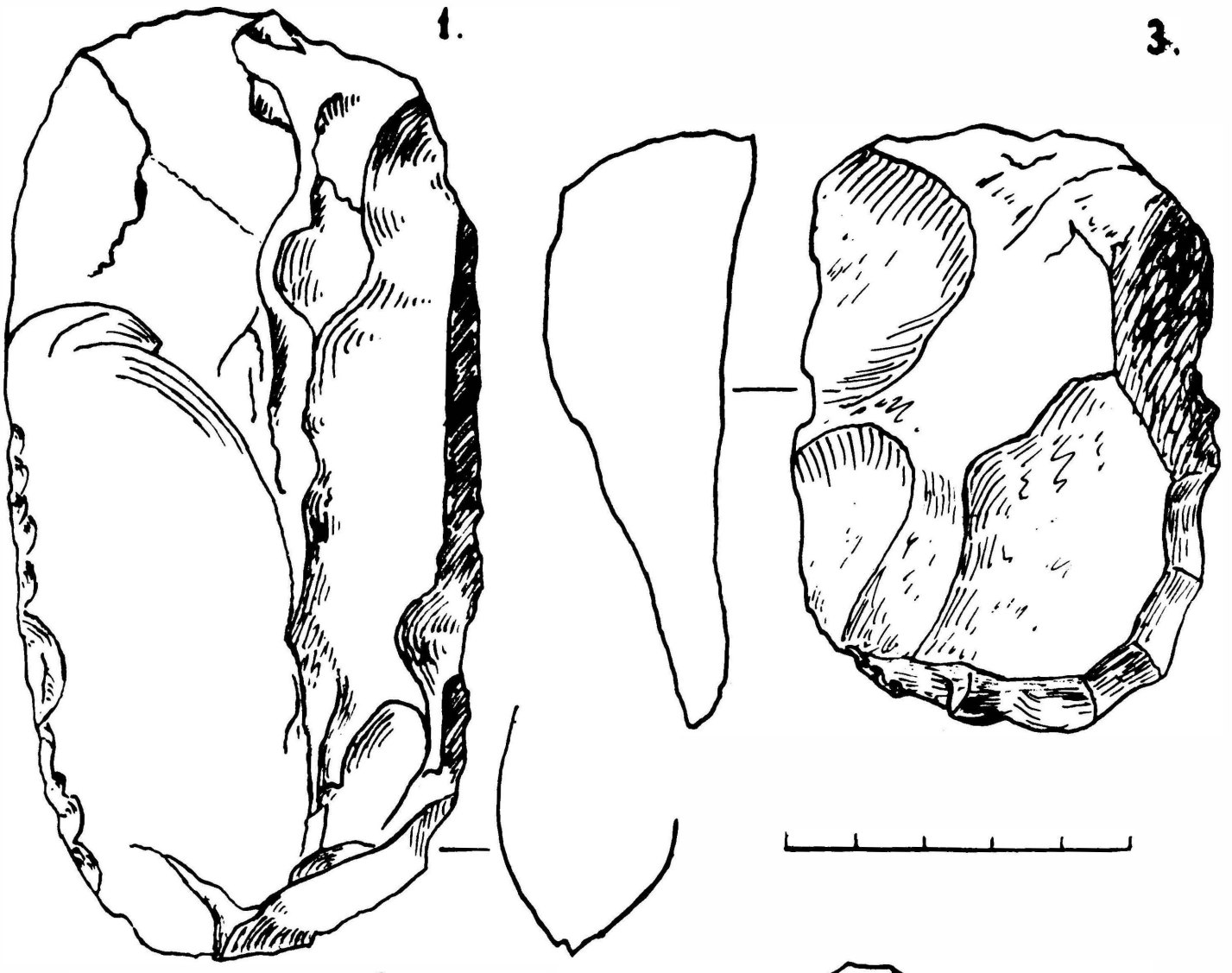
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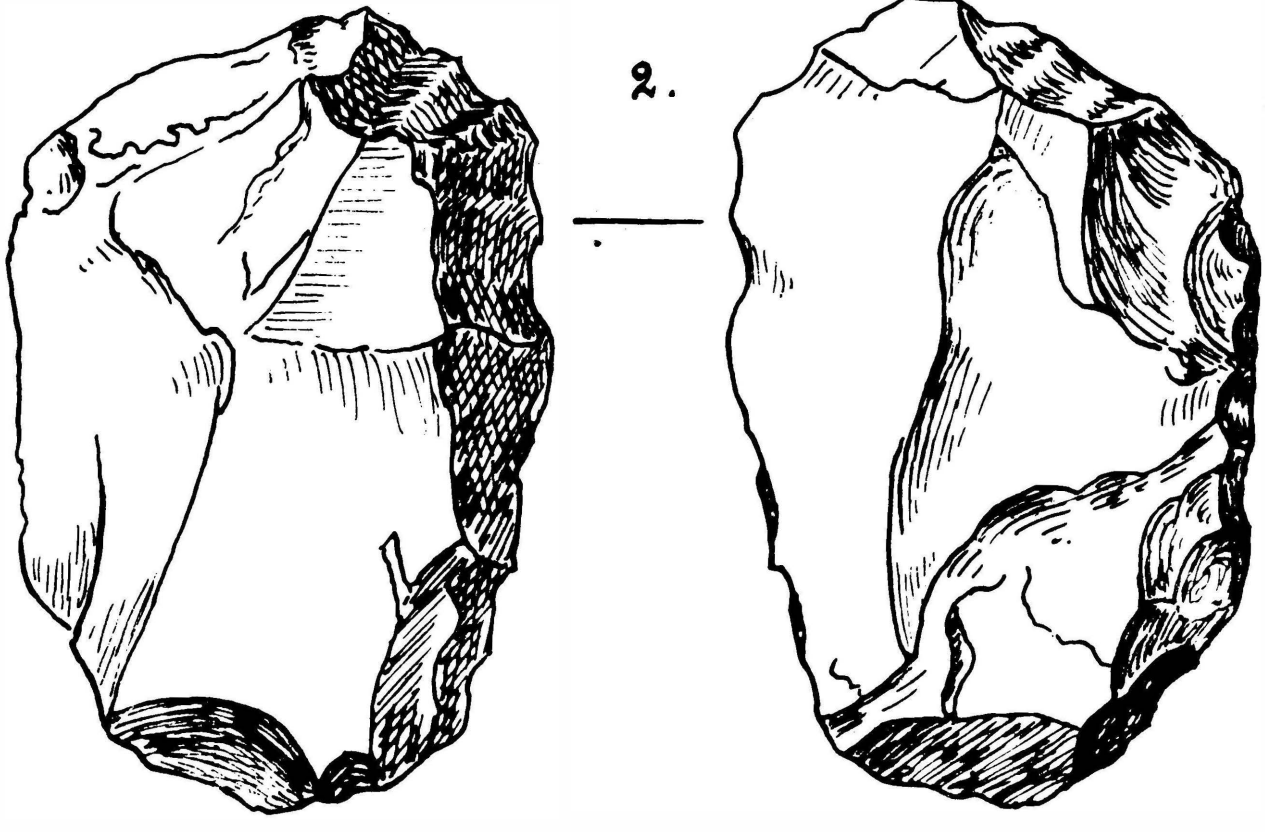
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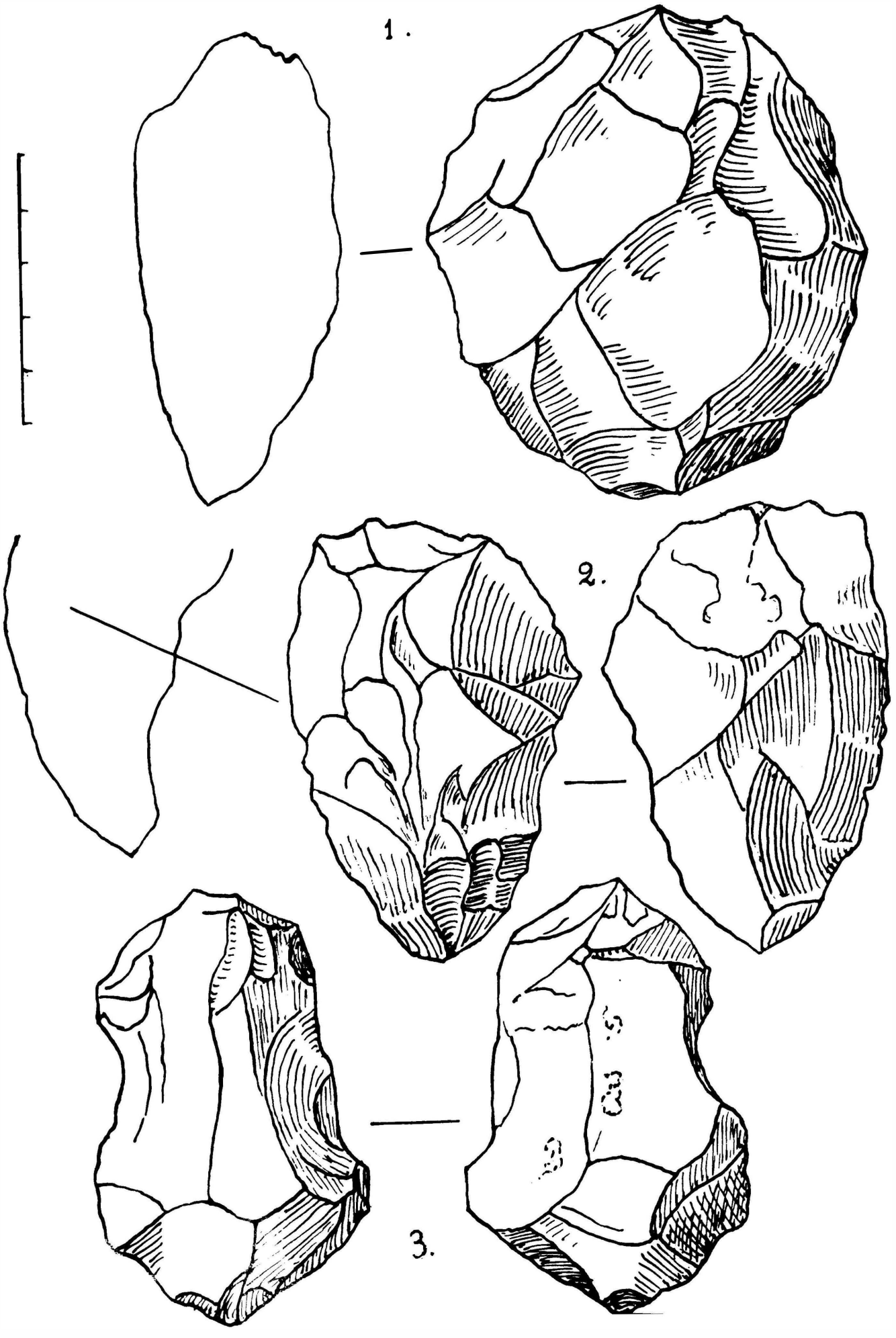
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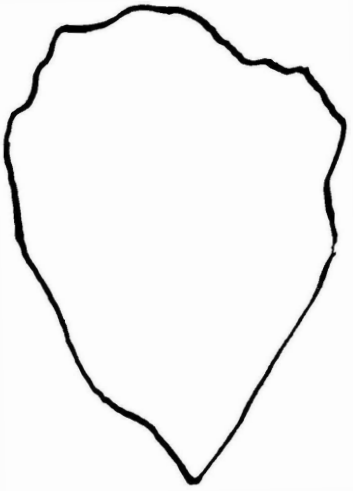


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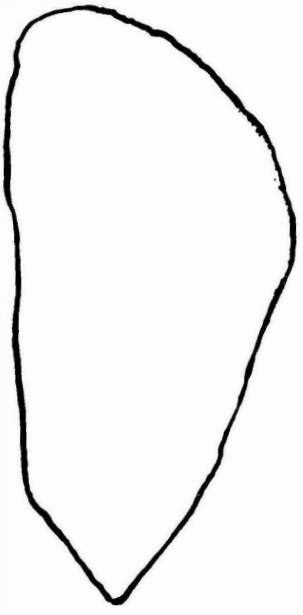


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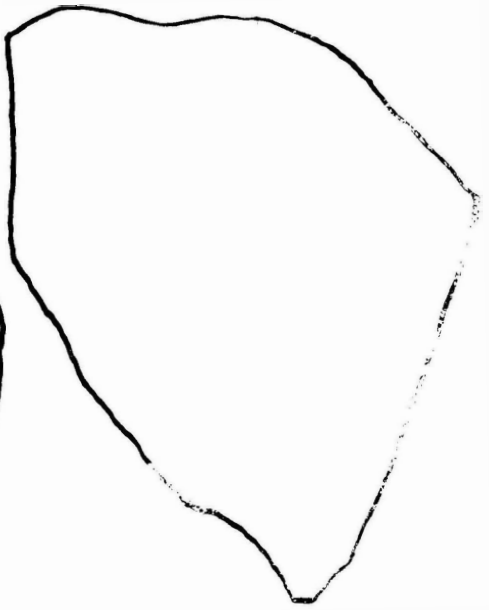

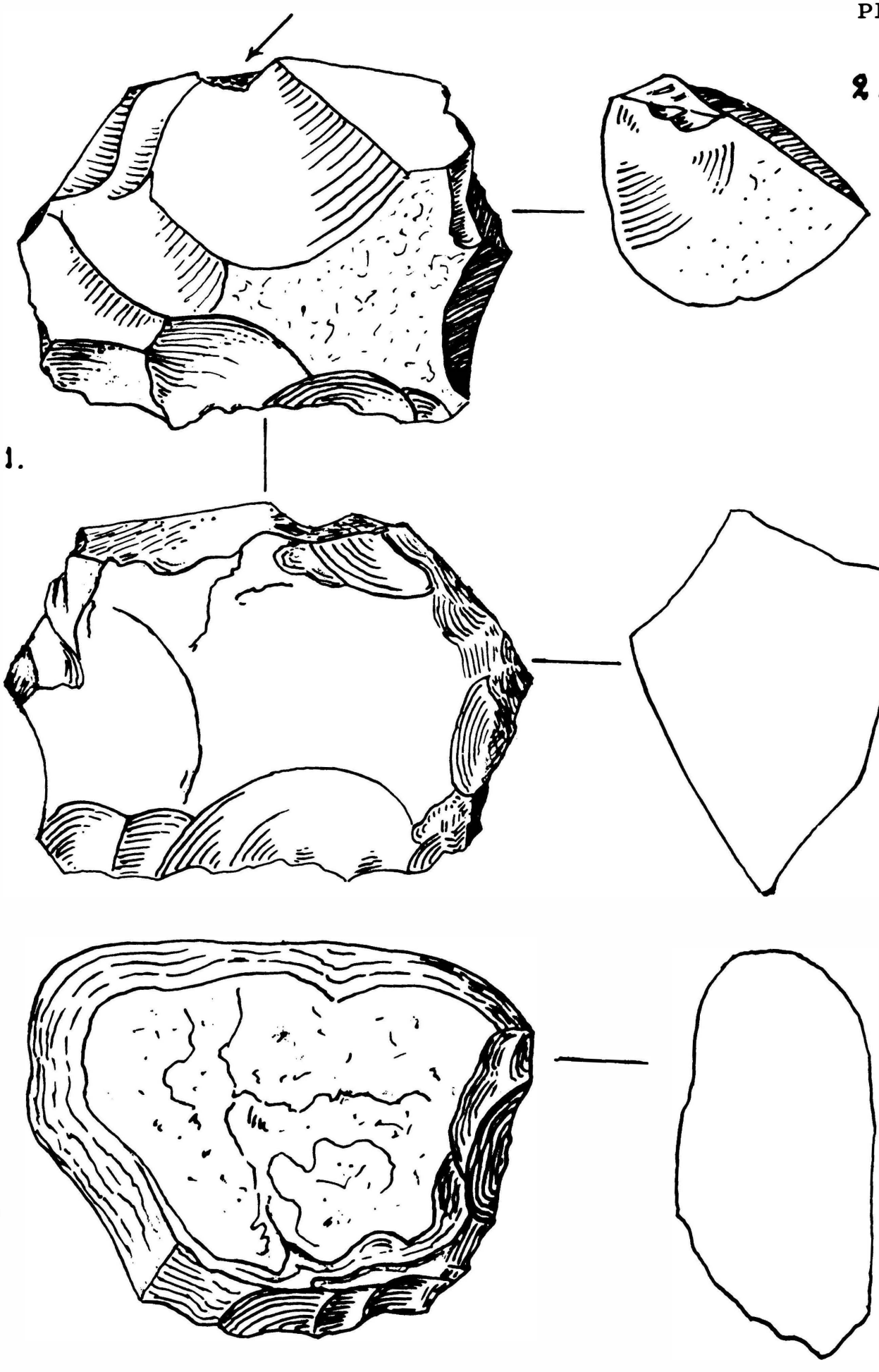
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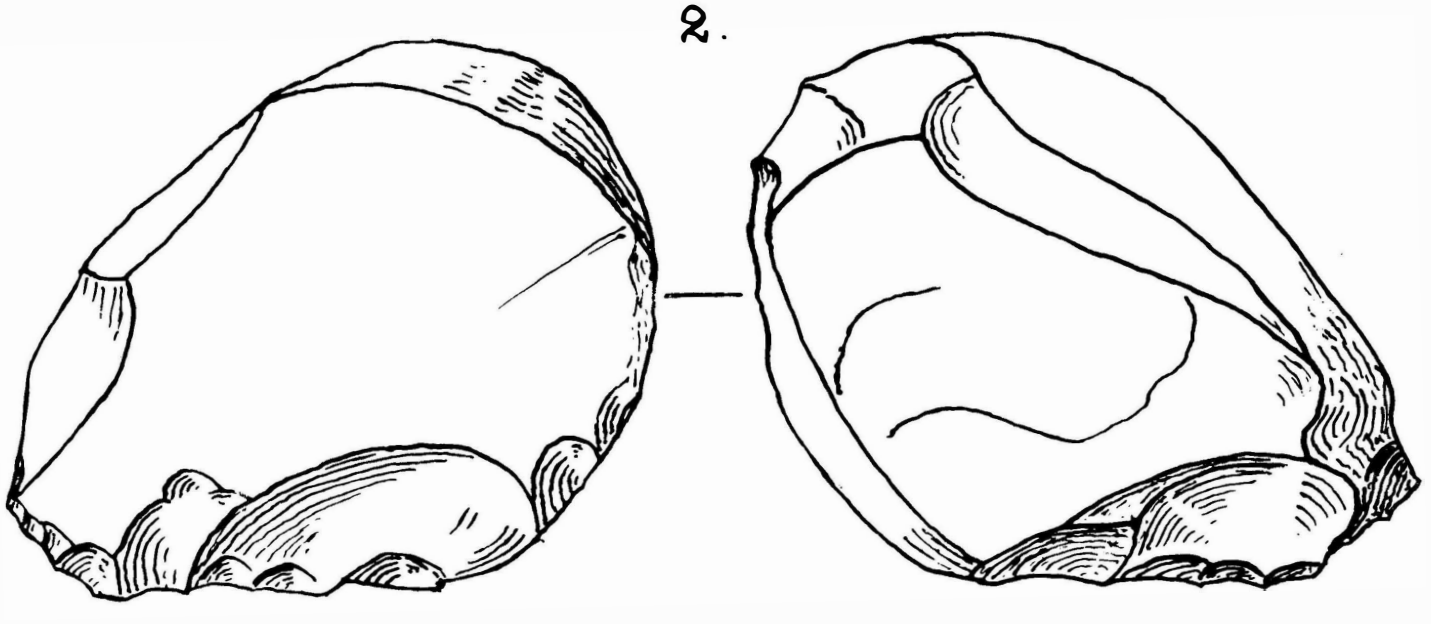
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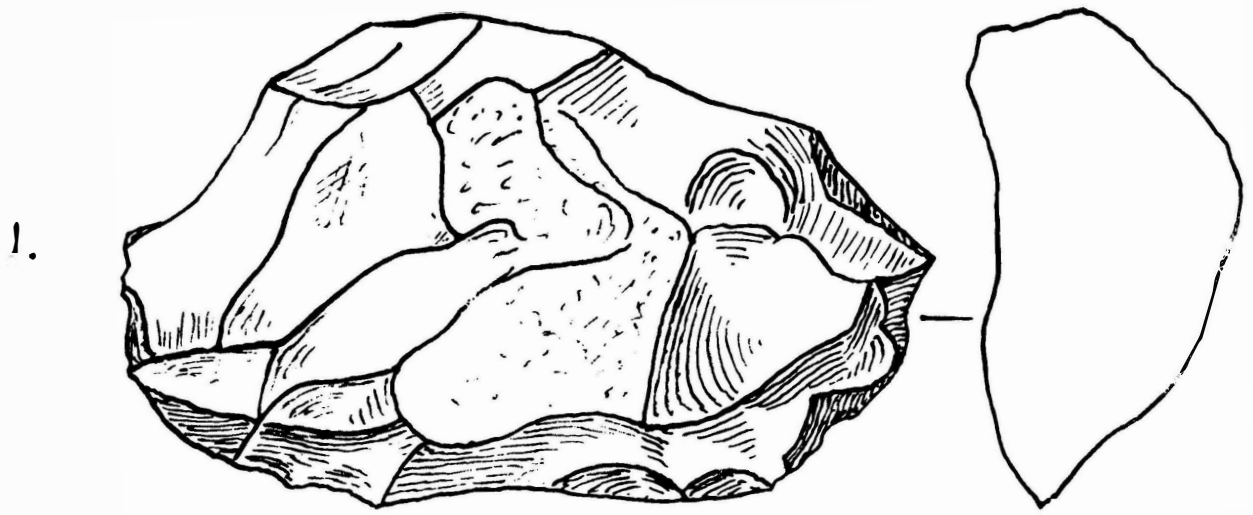
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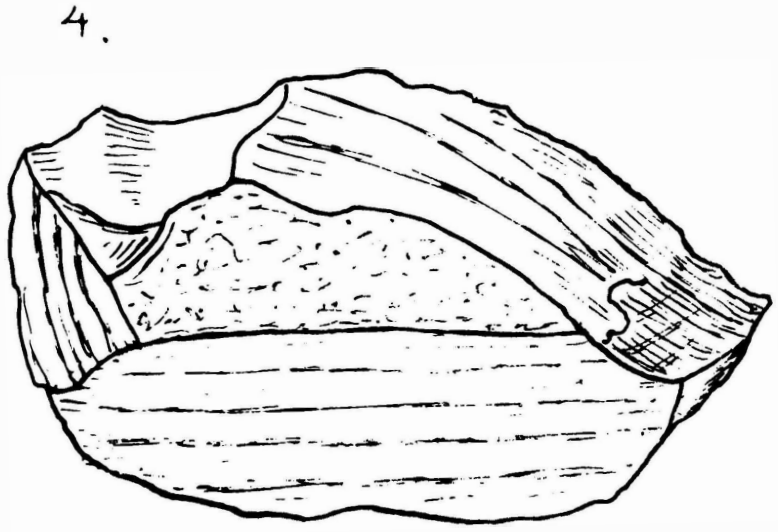
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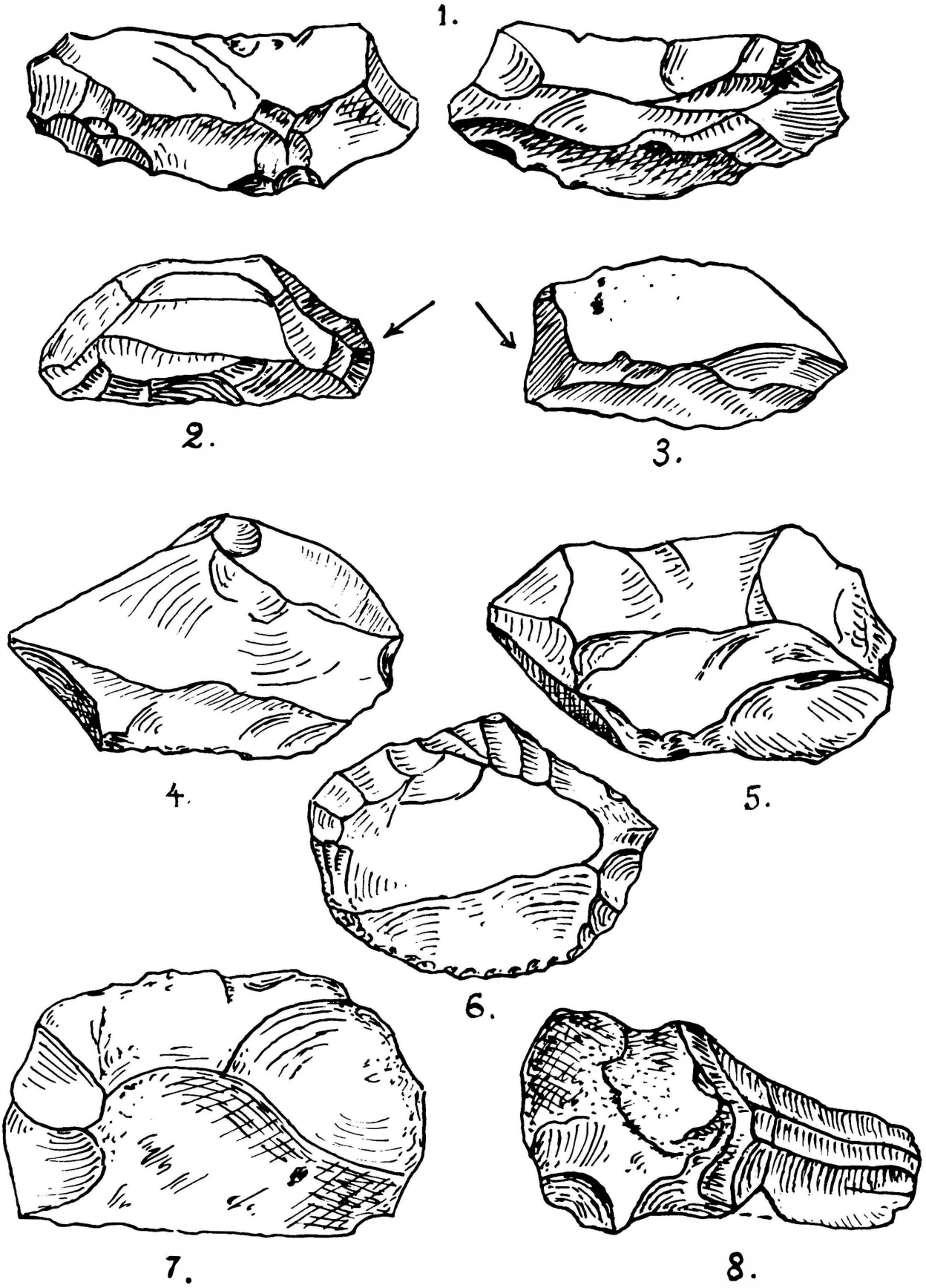
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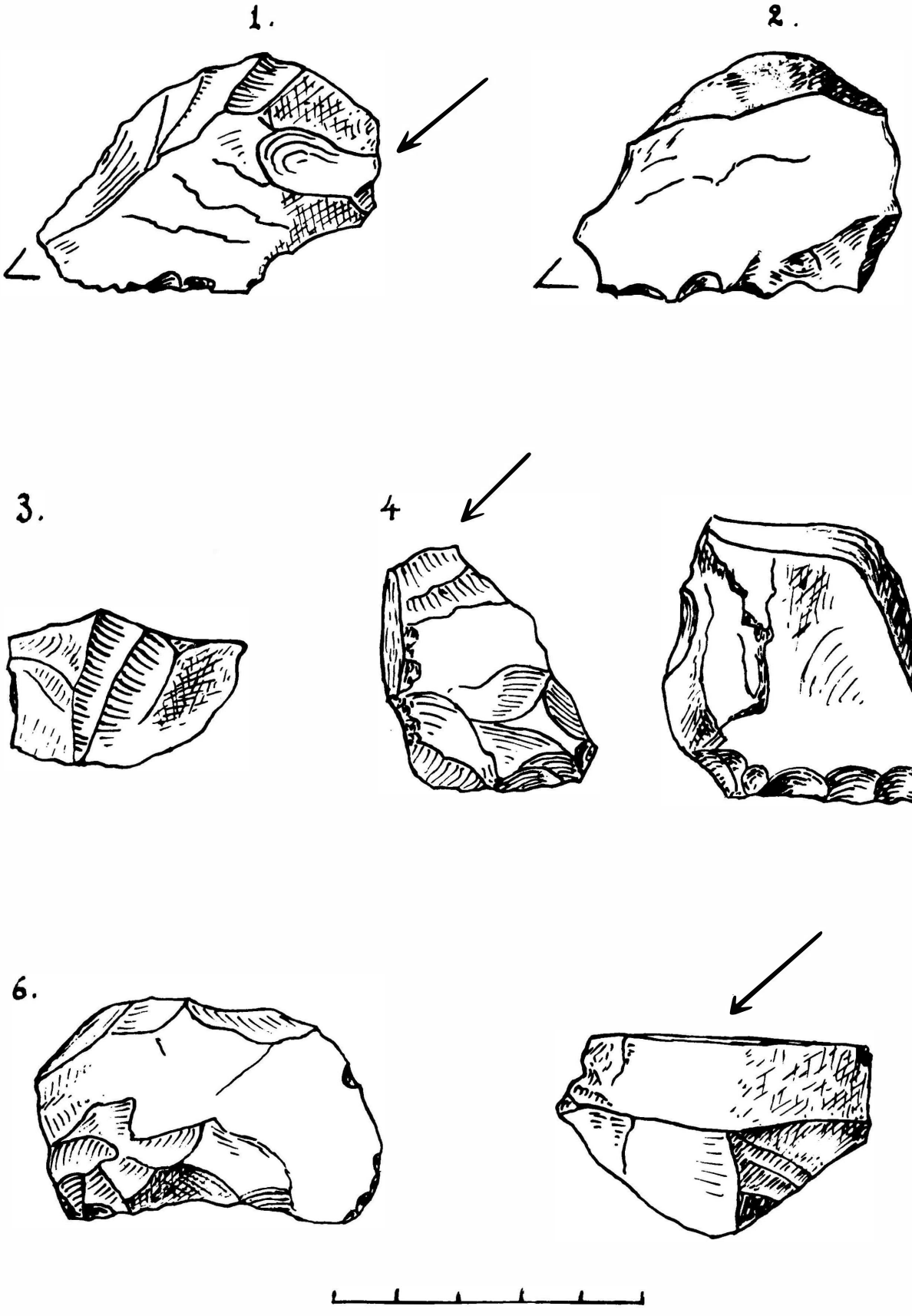
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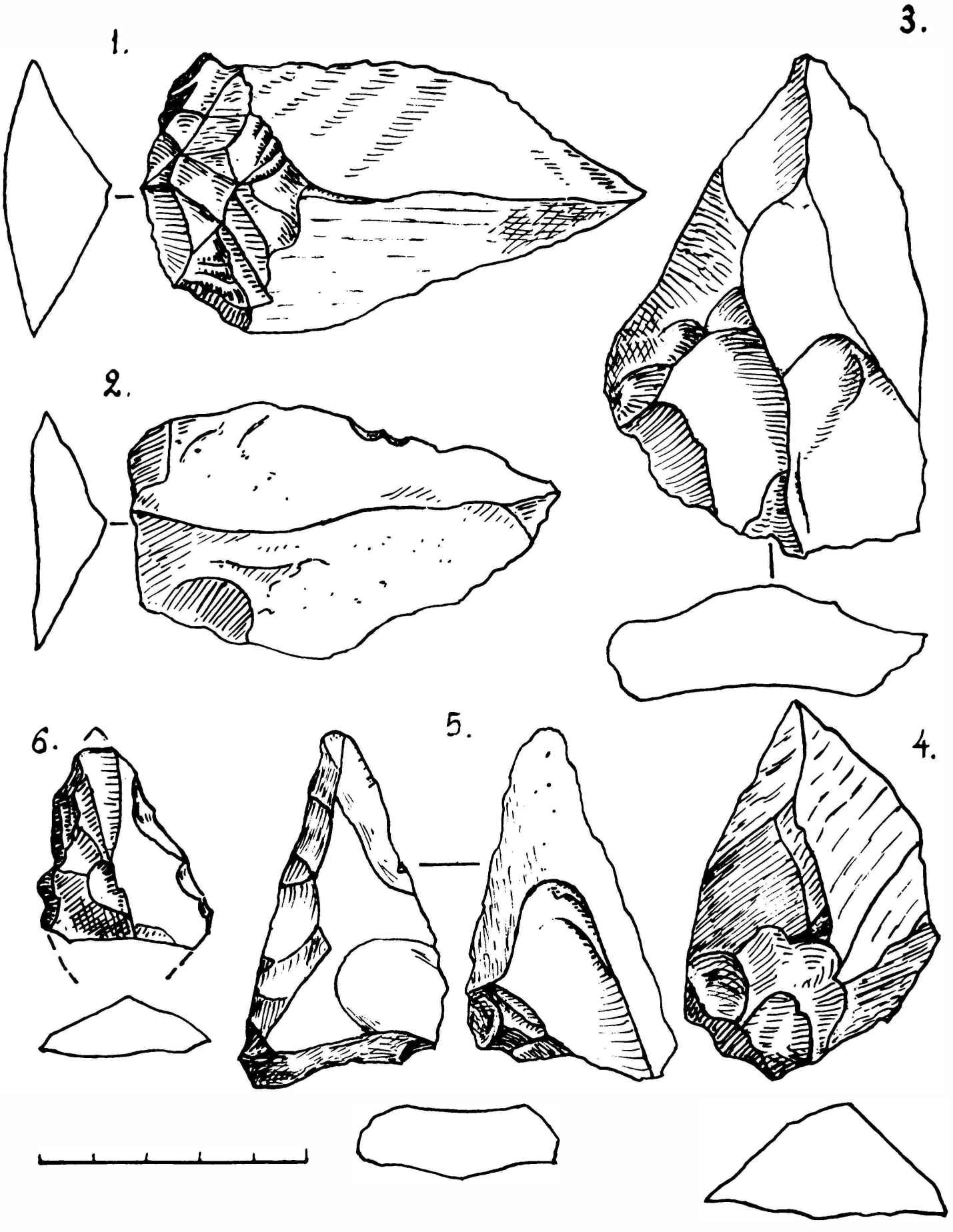
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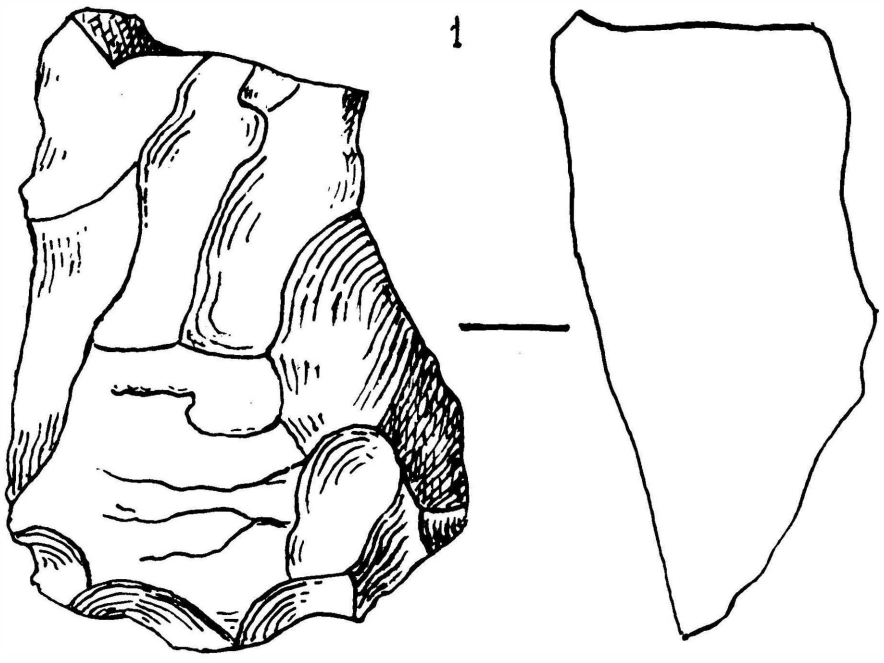

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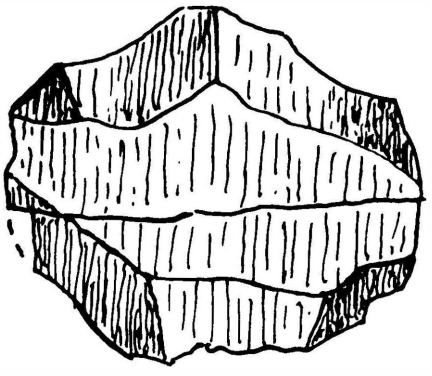

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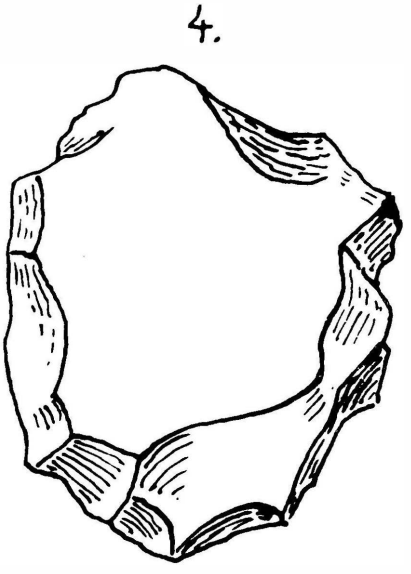

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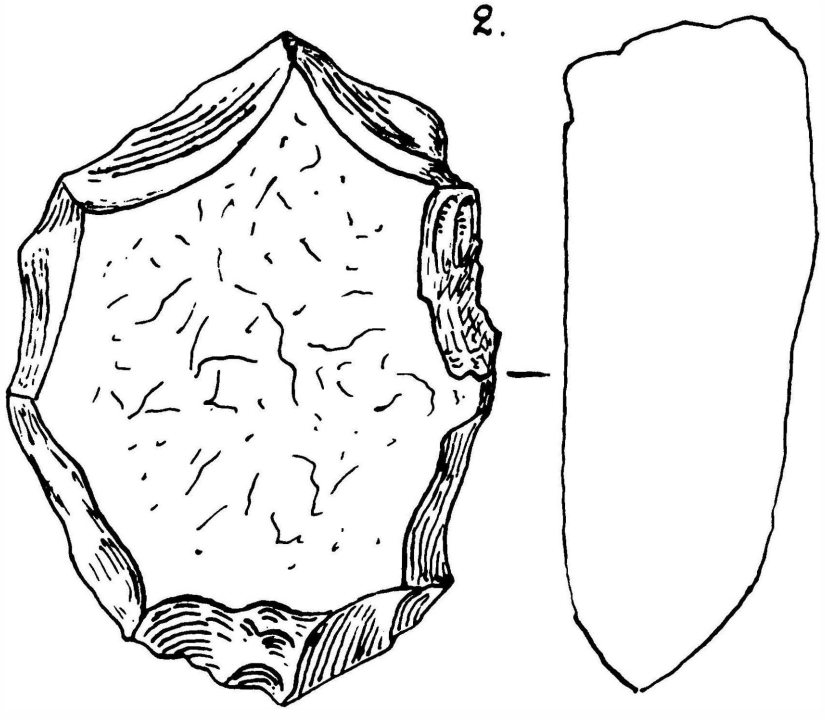

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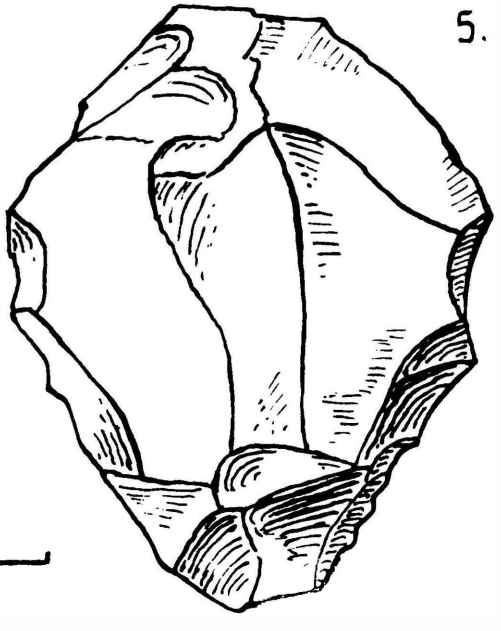

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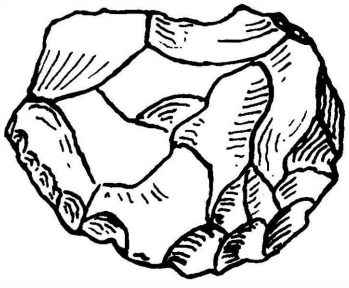

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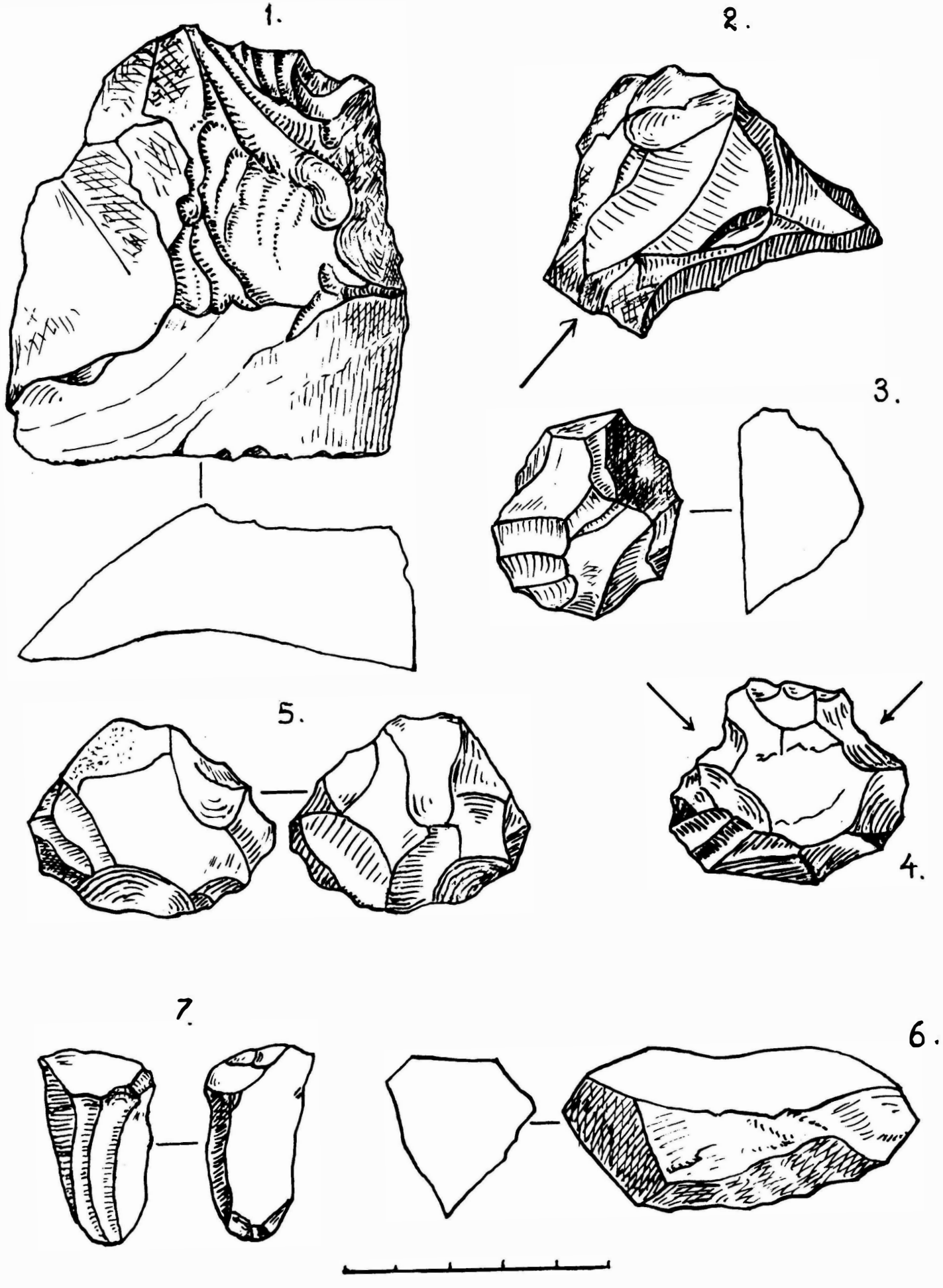
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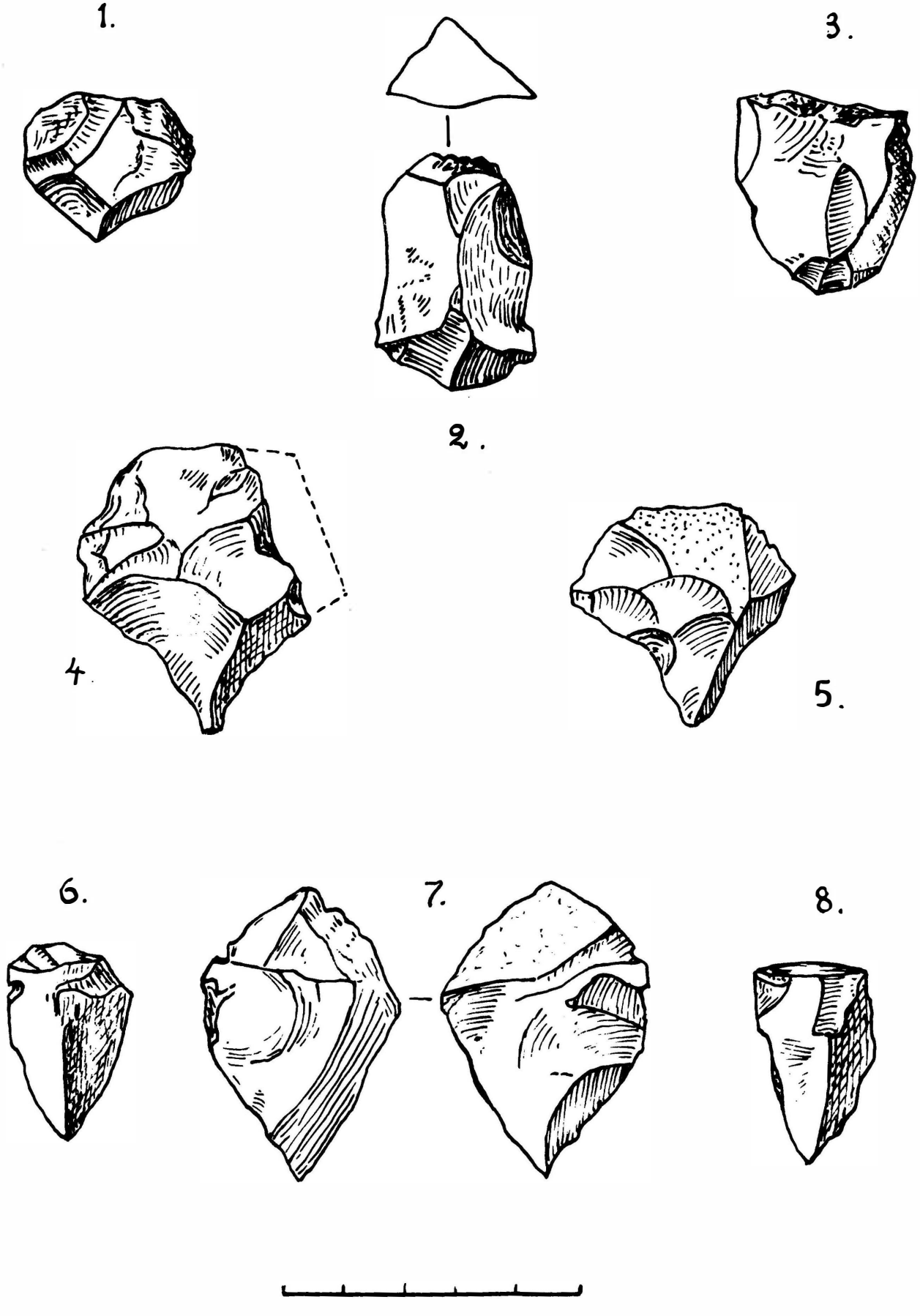
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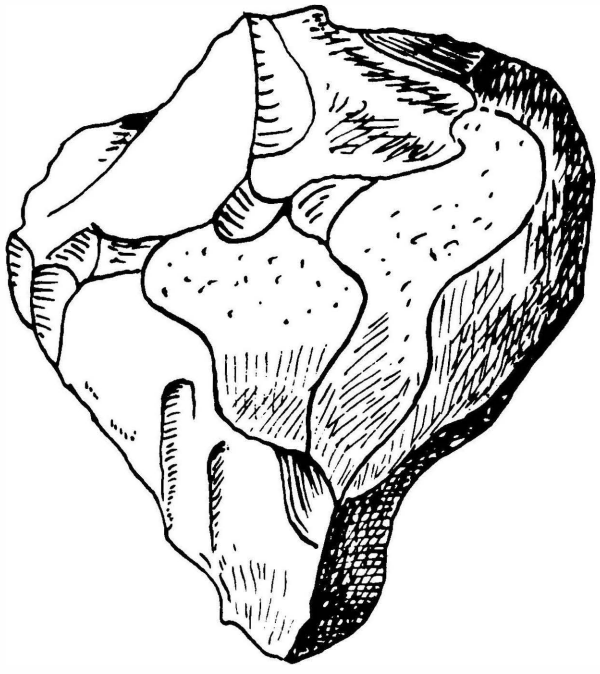

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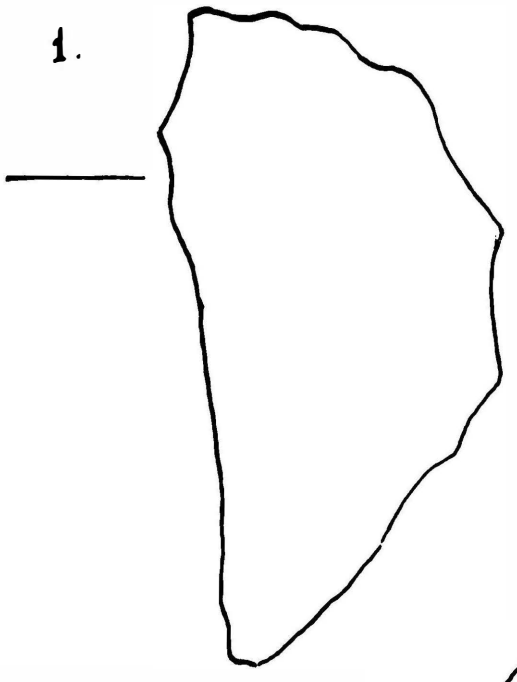

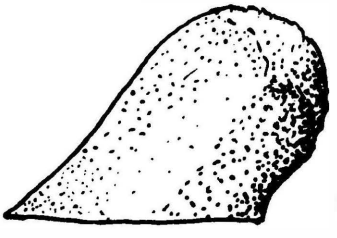

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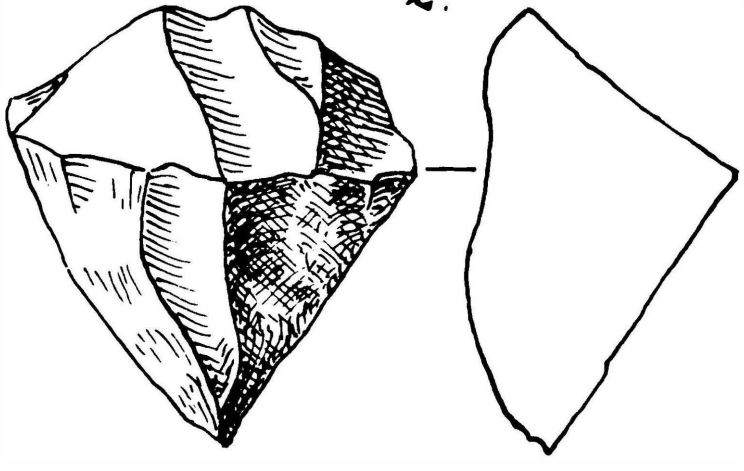

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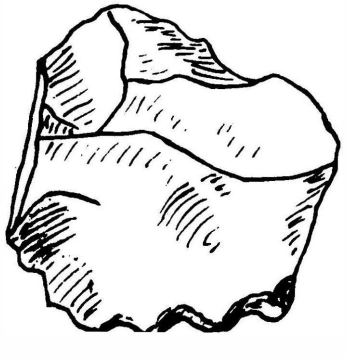

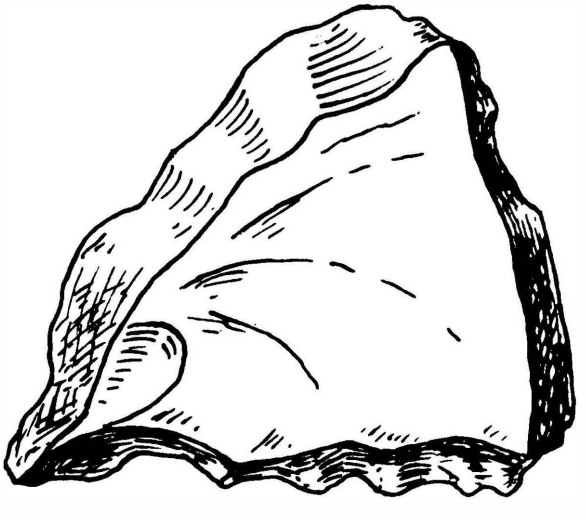

5.

RESULTS OF AN ARCHAEOLOGICAL SURVEY OF THE SOUTHERN REGION OF MORETON BAY AND OF MORETON ISLAND (1963-1964)

by

V.V. Ponosov

From April 1963 onwards, I conducted archaeological surveys on the region of Moreton Bay, under the auspices of the University of Queensland and with financial aid from the Australian Institute of Aboriginal Studies. Direct supervision was under Professor D.W. McElwain, Head of the Department of Psychology, and the senior lecturer in anthropology, Dr. D.J. Tugby.

The areas first indicated to me (islands in the southern region of Moreton Bay) did not produce many examples of stone industry. However, they did give the opportunity to register a large number of new sites of primitive habitation of the islands. On the other hand, investigation of Moreton Island in the last half of 1964, significantly added to my collection of stone implements, frequently of very good quality craftsmanship.

This project was in the nature of a preliminary survey and was finished at the end of 1964. No excavation was done, and because of this, it is too soon to make any chronological inferences with respect to the registered sites. But even this superficial study suggests that several sites are of considerable antiquity.

* * *

I. General Outline and Description of the Region

The name of Moreton Bay is given here to the sea area lying east of the city of Brisbane and bounded on the ocean side by a line of 3 islands - Moreton Island, North Stradbroke Island and South Stradbroke Island. The large Bribie Island lying in the extreme north of the Bay was not included in my survey. In the southern part of the Bay, between the 3 large islands mentioned and the mainland, lie a good many small islands (Macleay, Russell etc.). Most of these are unsuitable for permanent habitation.

I surveyed several of these islands reasonably carefully, but there still remain areas on some of them which have not been looked at.

The shore of the mainland, opposite these islands, was also looked at only in part. It is thickly populated, divided by wire fences and to a great extent built upon. Because of this, many places of archaeological interest have disappeared. These include a number of Bora Rings, of which all that is left are the tales told by the local inhabitants. Especially regrettable is the destruction of a Bora Ring, at Alberton on the bank of the Logan River, in the centre of which

was a stone structure in the shape of a "hut" as it was called by old inhabitants. This was destroyed only 6 years ago.

The uninhabited areas of the mainland are covered with scrub and swamps, which was another impediment to the survey. Because of this, the number of sites registered here is not large, when compared with the number of sites found and registered on the islands.

The part of territory investigated cuts into the Pacific Ocean area up to 153°28" East Longitude (Cape Moreton on Moreton Island) and in the north goes as far as North Point (Moreton Island) - 27°1'30" Latitude. In the south, my investigations went as far as Porpoise Point (South Stradbroke Island) - 27°56', southern latitude. Excursions on the shore of the mainland, as was said before, were not systematic and at no time went west of 153°15'.

The islands investigated can be divided into two groups -

(1) a long chain of islands serving as a barrier to Moreton Bay (Moreton Island, North Stradbroke, South Stradbroke Islands);

(2) the inner islands in the southern region of the Bay, which are significantly different from the ones in the first group.

The islands of the first group are mainly sandy in composition. Outcrops of a rather ancient type of rock, including real stone cliffs, occur only here and there. In places there are outcrops of crumbly, sandy ironstone. These outcroppings of rocks played an important role in the lives of the primitive inhabitants of the islands, as they served as the material sources for the manufacture of their stone implements. Even the sandy ironstone was used by these people and many chips and pieces of this rock were found on the sites.

Along the shores on the Ocean side of the islands in the "outer group" there are usually long stretches of beach, and directly behind and in line with the beaches rise the sand dunes. Two beach ridges can be distinguished here, the first reasonably low beach ridge and further back from the beach an older, second beach ridge. The latter is now often discontinuous and in the form of separate remnants. The first ridge is sometimes covered with grass, but is mostly devoid of any vegetation; and in this case is usually the source of the shifting sands which frequently cover over the second ridge, and having surmounted it, move on into the middle of the island destroying quite a lot of the scrub area.*

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* Sands move mainly under the influence of S.E. winds.

The second, older ridge, where it exists, is covered with a rather thick layer of humus, sandy soil and thick grassy vegetation. Besides this there is much bushy growth. Separate groups of trees begin to appear along the shore; in clumps or singly are pandanus palms, the fruit of which most probably served as food for the inhabitants of the sites.

Going further inland on the island, the fairly high sandy hills are covered with mixed eucalypt forest. The sands on the surface here are humus, often to a depth of about one yard. The soil can be classified as "grey forest soil on a sandy basis". Moreton Island seems to have, on an average, a fairly thin soil layer, and its northern part consists of sandy, hilly areas with swamps among stretches of sand. Swamps and lakes are numerous on the other islands. Especially to be noted is the large swamp which divides the sandy shore of North Stradbroke Island from the rather high interior of the island. It stretches for approximately 20 miles along the length of the island from North to South.

The western shores, on the Bay side of the 3 islands, present an entirely different aspect. Here there are no sandy dunes. Only one beach on Moreton Island is in any way similar to that of the Ocean shore; and even here, there are neither dunes nor ground swells, just a beach. The two other islands have no real beaches at all, except for a few sandy stretches, and the tree covered hills often come right down to the water's edge. Mangroves grow profusely on the parts of the shore which are covered by the tides.

South Stradbroke Island consists of a narrow, low, sandy strip, which at its widest part is no more than $1\frac{1}{2}$ miles across. Because of this it is devoid of the typical inner type vegetation of the other two islands. In this respect, it can be divided into two zones, "the eastern Ocean shore (dunes)" and the "western shore zone (sparse scrub)".

The "inner islands" in Moreton Bay (and I refer to these only from the point of view of habitation) present another aspect again. They give the appearance of being broken-off parts of the mainland. They are not sandy, but on the contrary are often stony and in parts are covered with "red soil".* At one time these islands were covered with thick scrub, but only parts of it remain now. All of these islands are quite small.

The solitary Peel Island shows a mixture of the features of the two island groups. It is fairly sandy and has quite long beaches.

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* Red earth residuals (W.H. Bryan, 1939).

Most of the islands I looked at are well equipped with fresh water springs, but the distribution of drinking water is not uniform; a reason for the lack of uniformity in the distribution of archaeological sites.

The remaining fauna now is not large in number. If one discounts the wild pigs, dogs, horses and in parts, cattle, then only North Stradbroke Island has retained some of the larger mammals in any number (kangaroos and wallabies). Local inhabitants have said that kangaroos, at times, swim over from North Stradbroke to Peel Island. Bandicoots and other small animals are numerous on all islands.

A great many snakes are to be found on all the islands (Death Adders, Tiger, Black, Brown and Carpet Snakes etc.). North Stradbroke Island has many goannas, including the very large Gould's goanna (?). Small lizards and the so-called Dragon Lizard (seen on Russell Island) abound. Birds are those common to the Queensland coast - sea, shore and land types. In the southern part of the Bay there are numerous black swans.

There are myriads of tiny crabs in the sands, which are now the prey of the wild pigs. The pigs also eat snakes, a fact which I myself have witnessed.

As the shore of the mainland differs little from similar areas round about, I will only mention that the coastline here is low, with many swampy areas. Formerly this region was covered with scrub, some of which still remains.*

* * *

My archaeological survey task consisted of:

(1) an investigation or survey of the prescribed areas.

(2) registering sites of archaeological significance

(3) a brief description of these sites obtained from the preliminary investigation

(4) collection of all archaeological materials - but without making any excavations (surface collection only).

At first I was taken to locations which were chosen beforehand or to a base picked on the spot, by a variety of ways (barge, boat, train, bus etc.). From these locations I struck out in various

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* In the mouth of the Coomera River, I came across forests containing quite a few palm trees. Palm trees also are to be found in the southern part of North Stradbroke Island.

directions on foot. The bases were sometimes small country hotels, other times small huts, but most usually a tent, in which I stayed from 4-6 days before moving to another place or returning to Brisbane. There, at the University of Queensland, I made a card index of every registered site and inspected and classified the collected materials. In this way a card catalogue for all sites investigated was compiled.

The numbering system for the sites is somewhat complicated. Sections of the official map of Queensland, each having its own name, were taken. So that for the areas in which I worked, I had maps of Brisbane, Beenleigh, Tamborine and Redcliffe (these names refer to districts - not towns). The numbering system on each map was separate (each beginning anew from No. 1). At times this led to some confusion. For example, of the 72 sites registered on Moreton Island, 67 are numbered by the map for the Redcliffe region and 5 are from the Brisbane region map. On North Stradbroke Island there is a site which had to be registered B/B (Brisbane/Beenleigh) since it lies on the borders of both regional maps and could not be called either one or the other.

In an area inside the small town of Dunwich, two sites both have the number 1; the first BEENLEIGH 1, the second BRISBANE 1. But I kept to this system as it was the numeration accepted before I began my investigations.

* * *

The majority of places of archaeological significance, found by me, are registered under the names of sites.

This is the name I will give to the temporary dwelling places of often not very large tribal or even family groups. In archaeological terms, this would be a place where traces of habitation, such as the so-called "kitchen remnant" (bone of animals and fish, shell-fish etc.) have been preserved. Among these, stone chips are sometimes to be found and small numbers of stone implements and semi-implements.

The sites are both large and small. But this does not always signify that large numbers lived on the large sites. There is more significance in how long these sites were inhabited or how many times. This was dependent on the suitability of the site for its inhabitants.

The requirements for a suitable site were most probably the following:

(1) a good location with regard to terrain (sheltered from the winds and not subject to floods or tides)

(2) a good location with regard to accessibility of drinking water

(3) a good location in terms of availability of food sources.

Whether the sites were occupied for a considerable time or only used as resting places, was dependent on these conditions. If the site was good, the people would return time and time again. A trained investigator can usually tell whether a place is worthwhile investigating or not. But several times the reason for the location of some sites was difficult to see at first glance.

In all, I found and registered 280 sites and also investigated Site No. 1 BRISB. on North Stradbroke Island, which was already a known site. Not registered, but included in my descriptions, are 3 sites which I looked at before my survey of 1963-64; and one which I have not seen but have had described to me by local inhabitants.

Sites which were either too small to register or too close to the already registered large sites, I have called sub-sites, marking them by the numbers of the nearby sites with the additions of letters, e.g. Site No. 1(a), (b), (c) etc. Special "places", which are of archaeological significance, but cannot be called sites will be discussed later.

The division of sites according to islands is the following:

Moreton Island	72 sites
North Stradbroke Island	121 "
South Stradbroke Island	28 "
Macleay Island	11 "
Russell Island	7 "
Peel Island	7 "
Lamb Island	3 "
Coochiemudlo Island	1 "
Perulpa Island	1 "
Mainland	30 "
In all	281 sites

The number of sites is usually comparable to the size of the islands.* The largest island, North Stradbroke, has most sites (121), indicating that its food resources were sufficient to support a larger number of people. Next in size is Moreton Island with fewer sites (72).

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* But it should be noted that some parts still remain uninvestigated.

Smallest of the trio, South Stradbroke, has only 28 sites. Macleay, Russell and Peel are small islands, while Lamb Island and the others are quite tiny.

It is difficult to discuss the number of sites in relation to area on the mainland coast, since this was surveyed only in several parts. From all accounts, the region north of Southport had been quite heavily inhabited at one time.

The 3 main islands, as was said before, constitute a line separating Moreton Bay from the Ocean. The southern end of South Stradbroke almost meets with the mainland near Southport, being separated by a shallow passage about 1½ miles wide. In the north, North and South Stradbroke are also separated by another very narrow and shallow passage (½ mile wide) called Jumpinin. These passages are so narrow that former inhabitants used to ford cattle from North Stradbroke to South Stradbroke and then onto the mainland. So it would seem that this could have been one of the routes the natives used to get from the mainland to North Stradbroke Island. The second route to North Stradbroke could have been via Russell Island, separated from it by the narrow Canaipa Passage. Many small islands suitable for temporary stops, but not for habitation, lie between Russell Island and the mainland; so the journey could have been made in easy stages.

Northernmost of the three is Moreton Island, separated from the other two by the rough and often dangerous South Passage (about 2 miles wide). About 10 miles to the north is Bribie Island (not investigated by me) and the seas between are often quite rough. Because of this, I would presume that the habitation of Moreton Island came primarily from North Stradbroke Island. (But one must take into account that the South Passage may at one time have been wider since the dunes on the southern end of Moreton Island seem to be more recent.)

* * *

II. Sites on the Ocean Shores

Sites on the eastern Ocean shores of the 3 main islands differ significantly from those on the western Bay shores. The differences lie, firstly in the superficial outward appearance of the sites, and secondly in the families of molluscs, the shells of which form the main mass of the cultural layers of the sites.

Judging from their present appearance, the sites on the Ocean side are characterized by the fact that they are all located on the sands of the dunes which form two different ages of the beach

ridges. The older beach ridge (the second line of dunes from the beach) was often covered by shifting sands which also covered the sites. At another time, the wind would blow away this sand and uncover the sites again. In several places this covering and uncovering of sites has happened so many times that it has caused the present cultural layers to sink and lose much of their original formation. On several sites (especially on Moreton Island), the winds have completely blown the sand away, and the "kitchen remnants" and cultural layers have sunk to an old black sandy rock base. Because of these winds, almost all of the sites on the Ocean side are in a poor state of preservation and are of little value for excavational purposes. But several are still worthy of attention.

I have divided the sites on the Ocean shores into 3 categories - with the reservation that, in some cases, these categories can be combined.

1. "Shell Patches"

These are usually small sites, completely deformed by winds. They are to be found in the bottoms of wind-eroded hollows, or on low eroded slopes of sand dunes. From a distance, they have the appearance of a white "patch" against a background of brownish sand. Sometimes the sites consisted of more than one "patch" of shells. Although these "patches" often give the impression of being a heap of shells, there is usually no real layer there, or it has been destroyed. Stone implements are often found on these "patches", because, being too heavy to be blown away, they sank to the bottom of the hollow together with the cultural layer.

2. "Talus" Formations of Shells

These are usually to be found on the remnants of the windblown slopes of the second beach ridge.

As the winds erode sand from the windward side of the dune, shells from the cultural layer are exposed and slide down the slope forming a "talus". Often the cultural layer has been completely destroyed and only the "talus" remains. The layers which jut out of the slopes must be treated with care because of crumbling. Following the constant covering and uncovering of the sites, such a "layer" may not be the primary deposit. (See schematic map. Text Fig. 1.) Site No. 15 BEEN. Because of the constant winds, these "talus" deposits will eventually become "patches" as described in Section 1. Stone implements are often found in these "talus deposits" but because of the constant crumbling of the layers many uncovered implements are often reburied. (Plate II, Figs. 1 and 2)

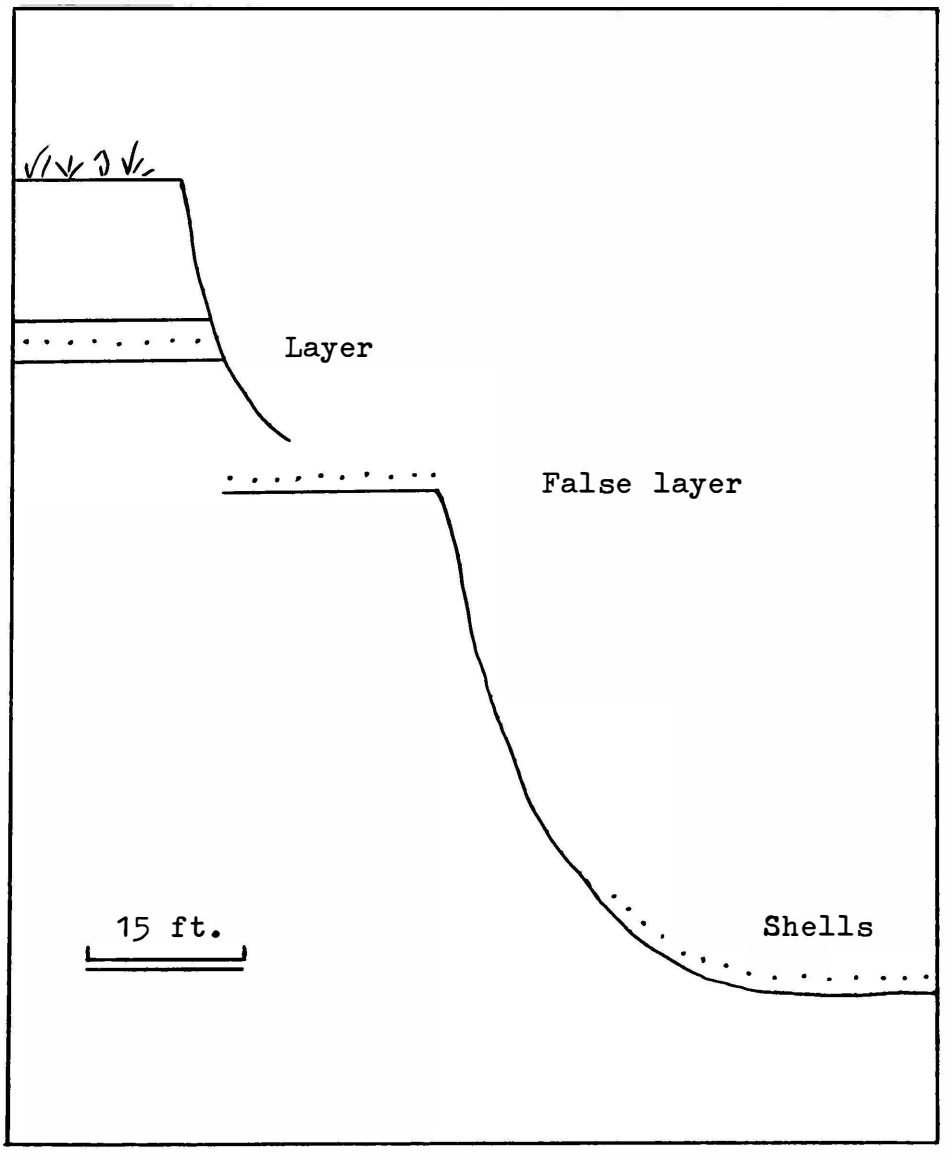

Fig. 1.

3. So-called "Heaps" of Shells

It would be more correct to call these "false heaps". From a distance they look like attractive white hills amongst the sand dunes. Such sites are Nos. 65 and 66 BRISB., Nos. 39 and 43 BEEN. (on North Stradbroke) or No. 5 RED. on Moreton Island. Several of these "heaps" rise to a height of 20 feet or more. Upon investigation, though, it becomes evident that these are not in fact real shell mounds, but sand hills covered on all sides by a "talus" of shells from the former cultural layer of a site. The remains of such a layer forms the top of the "heap". It is usually not very thick, about 6-8 inches, and rarely exceeds 12 inches. The process of formation of these "heaps" can be seen from the following schema.

First Stage

A shallow deposit of shells on the dune, left by the former inhabitants of the site.

Second Stage

The dune is eroded and the sand surrounding the site is blown away. But the layer of shells prevents the sand below it from being blown away. As a result, the cultural layer appears on top of a sand hill.

Third Stage

The edges of this layer of shells on top of the hill eventually begin to crumble from the effects of the wind. Some of the shells fall lower than others down the slope; soon all slopes come to be covered by the shell remnants. These shells restrict further erosion of the sand below, but the size of the top layer is now much smaller because of the crumbling. Sometimes the top layer of such a "heap" disappears. In the first case (where the top layer is preserved), the top of the "heap" is flat. In the second case (no top layer), the top of the "heap" is pointed or rounded. There are few "heaps" which could be called really large in size; but there is a large variety of small and medium sized ones. Eventually, because of erosion and time, these "heaps" too, will become "patches" of shells. At times, several "heaps" will flow into one another forming either a long "heap" or one of indefinite shape.

Apart from pieces of grindstones, there are usually few stone implements to be found on these "heaps". But implements are often found in large numbers a little distance away from them. This seems to suggest that these "heaps" were depository places for the shells, or eating places for them, but not permanent dwelling sites.

The very large "heaps" may have been places of communal collection of molluscs, for several tribal groups. (Plate III, Figs. 1 and 2)

Also to be found, are what I call "combined sites". These can consist of a large "heap" of shells, several small ones and a number of "talus deposits" and "patches".

Thus, the sites on the Ocean side of the 3 main islands are characterized by deposits of shells from sea molluscs. These sites could have been temporary or permanent depositories of the collected molluscs. They may have been eaten on the spot and the shells left - but they could also have been special "dumping grounds" and put there, for instance, to avoid the smell of remnants of decaying shell fish.

A rather interesting observation was made while inspecting these sites on the Ocean side where there was a layer of shells on the top, the shells (usually of the Donacidae family) were deposited as in stacks, one fitted into the other, the way plates are stacked one on top of the other. There were five or more shells in each stack. This may have occurred from their method of eating the molluscs. But in my opinion, it could have been a convenient way of carrying the shells from one place to another after having eaten them. By so stacking them, they do not fall from the hands.

The superficial aspects of Ocean sites change constantly. For instance, in summer of 1963, when I first inspected Site No. 35 BRISB., it consisted of a group of low "heaps" and "patches" in the middle of the site. The sand had been blown off them. In 1964, this site was again covered by sand, so that only the largest "heap" was in sight. But at the same time, two large "heaps" were uncovered in the southern part of the site as well as a large number of small "heaps" and "patches" in the northern section.

In 1964, I found a new site (No. 74 BRISB., North Stradbroke Island), between Sites Nos. 40 and 41 BRISB. There had been no sign of this site in 1963. Sites No. 36 and No. 37 BRISB. have now almost disappeared from the onslaughts of sand. This does not mean, of course, that they will not reappear in a year or two. But every such covering and uncovering of a site by sand destroys its original form and it loses its value for investigation.

Several sites have now entirely disappeared, destroyed by erosion. Site No. 47(a) BEEN. on North Stradbroke Island is an example. Almost destroyed by constant sand-blowing, the families of molluscs in the "kitchen remnants" were almost impossible to classify because no whole shells, or even half shells remained. There was only a formless "patch" of shell fragments mixed with sand. Because of this, I registered it as a subsidiary site to No. 47 BEEN., giving it the letter (a).

One must also note, that not all the sites on the Ocean side are located near sources of fresh drinking water - lakes, swamps, creeks or even damp spots where water could be dug for. Of course the landscape and terrain has changed, and former sources of water may have changed also. But because most of the sites are not so very ancient in time, the fact that some of these sites are not near water should be noted. This could suggest that some of the sites were not places of dwelling, but the results of mollusc gatherings at different times.

* * *

Below is a listing of the sites on the Ocean shores of the 3 main islands in the region I investigated. They are in the following order.

(1) Sites on Moreton Island (Ocean side) from the REDCLIFFE map and part of the BRISBANE map.

(2) Sites on North Stradbroke Island (Ocean side) from BRISBANE and BEENLEIGH maps.

(3) Sites on South Stradbroke Island (Ocean side) from the TAMBORINE map.

* * *

MORETON ISLAND — OCEAN SIDE — REDCLIFFE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
1	630.261-(260)	Combined site consisting of 3 parts	Donacidae	many	Two sub-sites and a central site
2	635.280	large	Donacidae	few	"Heap" and a group of "patches". Two layers noted in "heap".
3	637.286	large	Donacidae	great number	To the south is a sub-site.
4	637.292	large	Donacidae	great number	Group of "heaps" of shells
5	647.325	very large	Donacidae	none found (but some stone "chips")	A great "heap" of shells and "talus" of shells down the sides
6	675.413	very large	Donacidae (majority); Turbinidae Thaisidae	great number	Many opercula of Turbinidae; and two sub-sites
8	676.413	large	Donacidae (majority); Turbinidae Thaisidae	many, also chipped stone	Site of special significance
9	631.263	not large	Donacidae	many	-
10	632.266	not large	Donacidae	quite a few	"Heap" with remnants of layer

MORETON ISLAND — OCEAN SIDE — REDCLIFFE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
11	633.267	small	Donacidae	few	-
12	633.273	small	Donacidae	none found	-
13	634.281	quite large	Donacidae	none found	-
14	635.282	small	Donacidae	few	-
15	636.284	small	Donacidae	large number	There is a special area to north of this site.
16	637.288	small	Donacidae	some	-
17	636.290	not large	Donacidae	some	-
18	638.293	200 feet long	Donacidae	some	"Heap" of shells 40 ft. x 50 ft.
19	640.299	small	Donacidae	few	-
20	642.301	small	Donacidae	some	-
21	644.314	small	Donacidae	none found	-
22	645.318	small	Donacidae	few	-
23	646.320	quite large	Donacidae	many	A large "heap"
24	646.322	large	Donacidae	few	-
25	647.323	large	Donacidae	large number	-
26	648.330	small	Donacidae	some	Separate "heap" regist. as 26(a)

MORETON ISLAND — OCEAN SIDE — REDCLIFFE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
27	651.335	small	Donacidae	none found	-
28	651.336	small	Donacidae	none found	-
29	652.337	small	Donacidae	few	-
30	651.339	small	Donacidae	none found	"Heap" of shells
31	652.341	small	Donacidae	very few	-
32	653.343	large (100'x 150')	Donacidae	none found	-
33	653.344	very large	Donacidae (with yellow lining)	few	Group of large "heaps". Preserved layer on top of "heaps".
34	654.348	small	Donacidae	none found	-
35	654.347	not large	Donacidae	few (but lots of pieces of grindstone)	Has a sub-site
36	653.346	small	Donacidae	none found	-
37	659.372	quite large	Donacidae (absolute majority)	some	One large "heap" and a group of small ones
38	656.360	not large	Donacidae	few	Two "heaps"

MORETON ISLAND — OCEAN SIDE — REDCLIFFE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
39	670.400	small	Donacidae	few	One large "heap" and a group of small ones
40	677.412	medium	Donacidae Turbinidae Thaisidae (and a few Noticidae and Ostreidae)	few	On the cliffs above water
42	625.227	large	Donacidae	few	-
43	626.230	large	Donacidae	few	Several "heaps"
44	626.232	small	Donacidae	very few	Has Sub-site 44(a)
45	627.239	small	Donacidae	none found	-
46	627.241	large (100 x 25 yards	Donacidae	much chipped stone and stone implements	-
47	627.243	quite large	Donacidae and one Nautilus shell	few	7 or 8 small "heaps"
48	628.244	large	Donacidae	many	One large "heap" and several small ones
49	628.244	not large	Donacidae	very few	Next to Site No. 48.

MORETON ISLAND OCEAN SIDE REDCLIFFE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
50	628.245	very large	Donacidae	much chipped stone and implements	2 large "heaps" & several small ones
51	629.251	large	Donacidae (majority); Arcidae	large number	Large "heap"
52	630.256	large	Donacidae (abs.major.); few Naticidae	large number	-
53	624.224	small	Donacidae	few	-
54	623.200	small	Donacidae (abs.major.); Arcidae	none found	-
55	623.202	small	Donacidae	few	-
56	623.198	large	Donacidae	few	Layer exists. Also has Sub-site 56(a).
57	622.196	large up to 350 feet in length	Donacidae	quite a few	-
58	622.193	large	Donacidae	few	Has a Sub-site 58(a).
59	621.192	quite large	Donacidae	few	Layer preserved.
60	620.180 (179?)	small	Donacidae	few	-

MORETON ISLAND — OCEAN SIDE — REDCLIFFE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
61	619.176 (177?)	quite large	Donacidae	few	Small "heaps" of shells
62	619.174	quite large	Donacidae	few	-
63	619.173	quite large	Donacidae	large number	Has Sub-site 63(a)
64	619.167	quite large	Donacidae	few	Has Sub-site 64(a)
65	618.163	quite large	Donacidae	few	Two places; layer well preserved.
66	618.161	small	Donacidae	none found	-
71	629.260	small	Donacidae	few	-
72	630.258	large	Donacidae	none found	Layer of shells

MORETON ISLAND — OCEAN SITES — BRISBANE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
75	618.153	quite large	Donacidae	none found	Formerly registered as No.67 RED. Well preserved layer.
76	618.138	small	Donacidae	none found but many chips	Formerly registered as No.68 RED.
77	618.134	large (70' x 460')	Donacidae	few implements, much broken grindstone	Formerly registered as No. 69 RED. Group of "heaps" and several "patches" Sub-site 77(a)
78	619.132	small	Donacidae	few	Formerly registered as No.70 RED. Barely visible in dune.

NORTH STRADBROKE — OCEAN SIDE — BRISBANE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
32	730.902	medium	Donacidae	none found	In scrub on a high spot
33	732.902	small	Donacidae	none found	Below Site 32 near a swamp
34	734.902	small	Donacidae	none found	Near Ocean shore opposite Sites 32 & 33
35	744.920	large	Donacidae (abs.major.); few Thaisidae	few	Several "heaps" and "patches"
36	747.924	large in area but poor in remnants	Donacidae	few	Being covered with sand
37	745.923	medium	Donacidae	some	Being covered by sands
38	743.918	quite large	Donacidae	none found	-
39	742.916	medium	Donacidae	none found	Has Sub-site 39(a)
40	741.914	small	Donacidae	none found	-
41	740.913	medium	Donacidae	few	Bones of large mammal (whale?)
42	739.912	medium	Donacidae	none found	Many shattered bones (kangaroo?)

NORTH STRADBROKE OCEAN SIDE BRISBANE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
43	738.910	quite large	Donacidae	none found	-
44	737.908	medium	Donacidae	none found	Has Sub-site 44(a)
45	736.906	medium	Donacidae	some	-
46	735.904	medium	Donacidae	none found	Formerly registered as 45(a)
47	733.900	large	Donacidae	none found	Has thin layer in remnants of old dunes
48	732.898	quite large	Donacidae	few	Has Sub-site 48(a)
49	731.897	large	Donacidae	few	Has Sub-site 49(a)
50	731.896	quite large	Donacidae	some	Also Sub-site 50(a)
51	730.894	large	Donacidae	some	"Heap" of shells as covering layer
52	729.892	medium	Donacidae	some	-
53	728.890	?	Donacidae	none found	Badly covered by sand
54	727.888	small	Donacidae (few Thaisidae)	none found	-
55	726.886	very large	Donacidae	none found	Hugh "heap" of shells

NORTH STRADBROKE — OCEAN SIDE — BRISBANE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
56	725.884	medium	Donacidae	none found	Has Sub-site 56(a)
57	724.882	medium	Donacidae	none found	-
58	723.880	not very large	Donacidae (few Thaisidae)	few	-
59	724.878	?	Donacidae	none found	Almost covered with sand
60	723.876	not very large	Donacidae (few Thaisidae & Cardidae)	none found	Has Sub-site 60(a)
61	722.874	large	Donacidae	none found	-
62	721.872	not very large	Donacidae	none found	Has Sub-site 62(a)
63	721.870	very large	Donacidae	quite a few	Large "heap" of shells
64	720?/868	large	Donacidae	few	"Heap" of shells
65	718.865	very large	Donacidae	few	Large "heap" & group of small ones. Covering layer. Sub-site 65(a)

NORTH STRADBROKE OCEAN SIDE BRISBANE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
66	717.862	very large	Donacidae (several Ostreidae)	few, but many stone chips	Large "heap" and some smaller. Also Sub-site 66(a)
BRIS./ BEEN.	715.855	large	Donacidae (some Thaisidae)	quite a few	Large "heap" and group of small
67	722.880	small	Donacidae	none found	Destroyed by winds
69	717(718?).870	very large	Donacidae	none found	In a swamp behind dunes. Layer of 2 feet of shells below grass.
70	750.928	medium	Donacidae (some Thaisidae)	none found	Destroyed by excavations
72	751.928	not very large	Donacidae (some Thaisidae, Ostreidae and Potamididae)	few	Thaisidae and one Potamididae were found in N.W. part site on a cliff.
73	748.927	small	Donacidae	some	-
74	740.913	small	Donacidae	none found	There is a layer in rem-nants of dunes.

SITE: BEHIND THE LARGE SWAMP IN THE SCRUB BUT BEARING TO OCEAN SIDE

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
68	713.872	quite large	Donacidae	none found	Badly damaged by TAZI construction

NORTH STRADBROKE — OCEAN SIDE — BEENLEIGH MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
7	678.751	not very large	Donacidae	only chips of stone	-
8	679.753	quite large	Donacidae	some	Lots of tree stumps
9	680.759	small	Donacidae	none found	-
10	682.763	?	Donacidae	none found	Almost completely destroyed by sand mining
12	683.767	small	Donacidae	few	-
13	683.771	medium	Donacidae	none found	"Heap" of shells
14	684.775	small	Donacidae	none found	-
15	685.779	medium	Donacidae	some	Has a layer (could even be double layer?); also Sub-site 15(a)
16	686.783	large	Donacidae Sub-site 16(a): Donacidae & Potamididae	some	Sub-site 16(a) differs from main site by different shells

NORTH STRADBROKE OCEAN SIDE BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
17	688.787	large	Donacidae	found many so-called "draught" stones & many broken stones	There are 3 thin layers in the remnants
18	689.790	small	Donacidae	none found	Two parts divided by dune remnant
19	691.795	large	Donacidae	few	"Heap" of shells
21	676.749	not very large	Donacidae	none found	Has Sub-site 21(a)
22	676.745	quite large	Donacidae	few	Half-way between Ocean and swamp
23	675.741	large	Donacidae	some	"Heaps" of shells
24	674.737	medium	Donacidae	only stone chips	Almost covered by sand
25	673.733	small	Donacidae	few	Half-covered by sand; has Sub-site 25(a)
26	673.728 ?	large	Donacidae	few	Near a lake; fair distance from sea.

NORTH STRADBROKE OCEAN SIDE BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Caregory	Shells in Cultural Layers	Stone Implements	Various Comments
27	672.726 ?	not very large	Donacidae	none found	Quite close to Site No. 26
28	671.721	Two smallish sites close together	Donacidae	quite a few	Site 28 and Sub-site 28(a)
29	670.717	at present medium	Donacidae	some	Partly destroyed by TAZI
30	669.713	not very large	Donacidae	none found	Much covered by sand
31	668.709	?	Donacidae	none found but some stone chips	Mostly covered by sand
32	668.708	small	Donacidae	none found	Covered by sand
33	696.803	small	Donacidae	some	Bones of whale (?)
34	698.810	very small	Donacidae	none found	-
35	699.814	large	Donacidae	none found	Large "heap" of shells with layer on top
36	700.818	very large	Donacidae (majority); some Potamididae and Arcidae	quite a few	Situated on two large "heaps". Layers exclusively Donacidae.

NORTH STRADBROKE OCEAN SIDE BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
37	705.828	large	Donacidae (some Arcidae)	quite a few	-
38	706.830	small	Donacidae	few	Has a layer one foot thick in remnants
39	709.839	very large	Donacidae	large number of so-called "draughts"	Two very large "heaps" and "talus"
40	711.846	large	Donacidae	few	Near a small lake
41	658.665	medium	Donacidae	few	Camp of August 1963
42	659.667	not very large	Donacidae	few - but lot "draughts"	-
43	660.670	very large	Donacidae & 1 Nautilus pompilius (?)	quite a few pieces of red ochre	Group of large "heaps" - one "heap" covered by layer of shells, then layer of sandy soil, then layer of pumice
44	655.680	was large	Donacidae	none found	Behind dunes near swamp - damaged by TAZI
45	660.690	small	Donacidae	none found	Among the dunes

NORTH STRADBROKE OCEAN SIDE BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
46	665.695	not very large	Donacidae	none found	Among dunes
47	664.700	small	Donacidae	none found	Among dunes
47(a)		destroyed	Donacidae	none found	Among dunes near Site No. 47. Completely destroyed by wind.
48	665.706	not very large	Donacidae	none found	Badly damaged by Tazi.
49	660.696	evidently was large	Donacidae	none found	Near swamp
50	658.694	evidently was large	Donacidae	few	Near swamp - has Sub-site 50(a)
51	656.690	evidently was large	Donacidae	none found	Near swamp

SITES ON BANK OF LARGE SWAMP BEARING TOWARD OCEAN SIDE

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
5	680.808	not very large	Donacidae (majority); some Potamididae	none found	Area of Blue Lake; has a layer but not very thick.
6	668.759	not very large	Donacidae Arcidae Potamididae	none found	Herring Lagoon area; almost destroyed by TAZI
11	665.760	large	Top layer Donacidae, lower Arcidae & Potamididae	none found	Herring Lagoon area. Two layers of different shells.
20	676.751	not very large	Donacidae (majority; some Arcidae, Potamididae, Ostreidae)	none found	Herring Lagoon area. Has a layer.
56	686.809	large	Donacidae	none found	Blue Lake area has a layer.
57	686.808	fairly large	Donacidae	none found	Blue Lake area has a layer.
58	687.807	large	Donacidae	one only	Blue Lake area
59	688.809	large	Donacidae	none found	Blue Lake area has a layer.
66	687.806	not very large	Donacidae	none found	Blue Lake area
67	686.805	not very	Donacidae	none found	Blue Lake area

SITES ON BANK OF LARGE SWAMP BEARING TOWARD OCEAN SIDE (contd.)

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
76	?	not very large	Donacidae	none found	Incorrect map ref. - not far from Site No. 86
86	637.657	not very large	Donacidae (majority); some Ostreidae	none found	-

SOUTH STRADBROKE ISLAND — OCEAN SIDE — TAMBORINE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
1	612.375	small	Donacidae; but one section consists of Potamididae	only "draughts"	Eight "draughts" together in one spot
2	612.378	75 ft. East to West 100 ft. North to South	Donacidae	none found	-
3	613.381	small	Donacidae	none found	-
4	614.398	150 ft. S.W.-N.E.	Donacidae	none found	Has Sub-site 4(a)
5	615.408 (410?)	small	Donacidae	none found	Fair amount of charcoal.
13	628.505	small	First spot only Donacidae, second spot Ostreidae & Donacidae	none found	-
14	635.525	fairly large 150' N-S 120' E-W	Donacidae (majority) Potamididae & Arcidae	few	-
16	635.528	not very large 100' x 40'	Donacidae (majority) some Ostreidae & Potamididae	none found	-

SOUTH STRADBROKE ISLAND — OCEAN SIDE — TAMBORINE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
18	615.417 (418?)	not very large; about 100 ft. long	Donacidae	none found	Damaged by TAZI
19	615.418 (419?)	not very large; about 100 ft. long	Donacidae	none found	-
20	616.417	small	Donacidae	none found	Damaged by sand mining
21	616.416	?	Donacidae	one grindstone	Damaged by sand mining
22	616.415	small	Donacidae	none found	Damaged by sand mining
23	627.490	small	Donacidae	none found	-
SITE SITUATED CLOSER TO BAY SIDE BUT OCEAN SIDE TYPE SITE					
15	632.525	large	Donacidae (majority); Ostreidae Arcidae Potamididae	none found	Island is very narrow here

Of the total 281 sites registered and investigated by me, 185 sites belong to the Ocean side of the 3 main islands of Moreton Bay.

Five sites on the southern end of North Stradbroke Island are not included, firstly because of their location, and secondly because the families of shells in their cultural layers belong more to the type of site to be found on the Bay side of the islands. In fact, the shores of the southern part of the island open out, partly into Canaipa Passage and partly into the small Swan Bay and its canals.* But they are not far from the Ocean side.

From the descriptive lists of the sites, it can be seen that the majority of them are either small or medium sized. There are no more than 40 or so large sites (including those which were formerly large and have been destroyed either by erosion or mining). For all that, several are worthy of mention.

* * *

Description of Sites

First on the list is Site No. 6 RED. on Moreton Island. This site is very large in area, the central part alone being at least 300 yards in diameter. Besides this, there are two sub-sites, No. 6(a) and No. 6(b), attached to it. It is located on a very low slope of a wind-eroded dune, alongside cliffs which jut out into the Ocean at Cape Moreton. Part of it rests on the sand and part on old black iron-stone, from which the sand is now blown away. As a result, the entire original surface of the site has been revealed and the implements and other traces of civilization are as if in the same positions as they were left. Unfortunately we do not know the height of the dune which once covered the site and cannot say whether all remains belong to the one horizontal layer or whether they come from several, having been telescoped by the erosion of sand.

In its present state, the whole area is covered by large and small split stones, flakes and chips left from the manufacture of implements (and of course, finished or partially finished stone implements and semi-implements). There are many shells, mainly of the Donacidae family, but including some Thaisidae and Turbinidae. But what mainly distinguishes this site from others is the large number of

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* Actually these sites are located on the edge of a swamp which has formed in line with the shore of the southern part of the island.

opercula from Turbinidae molluscs - the so-called "cat's eyes" which must certainly have been collected for some special reason.

Also very noticeable, is that in comparison with the great quantity of stone implements and waste flakes, the number of shells is not great; and they do not even occur on some parts of the site. All this serves to give the impression that this was not a permanent dwelling site, but a special place where stone was quarried and worked.

The sites on Moreton Island are usually located among the dunes. Outcrops of stone do occur here and there, but in the main they are of sandy ironstone and other types of rock little suited for manufacture of implements. Cape Moreton is one of the few places providing a good source of raw material. The rock here is a certain type of Rhyolite - implements of which I found on almost every site on the island. At the bottom of the cliffs there are also a quantity of largish pebbles of a different type of rock.

Cape Moreton Rhyolite is attractive in appearance being various shades of red; and seems to have been used mainly for making large implements. It is quite suitable for polishing (see stone knife No. 761 from Site No. 33 RED.)

Implements made of Rhyolite, as well as just pieces of this rock, were found even on sites on the southern part of the island - almost 20 miles away from Cape Moreton. But I did not find any stone implements of this material on the other islands, which indicates that the habitation on Moreton Island was somewhat isolated.

Places where the craftsmen sat and worked their stone can still be seen on Site No. 6. Large stones hewn or broken by blows are there in abundance. Some broken stones, from which a few pieces have flown to a side are still in the same position as left by the craftsman, who for some reason (it may have been too soft or unsuitable) did not use the stone or its parts to make an implement. In other places, one can see stones or chips from them spread out in a more or less "horseshoe" shape about a yard in diameter. In the northern part of the site such a "horseshoe" exists in its well preserved original state. One can get quite a clear picture of a man sitting in the centre of this "horseshoe" knapping his stone implements, the chips and other pieces of stone falling all about him except for the part behind his back. This then would be the entrance into the "horseshoe". Partially finished implements and the flakes from these very implements were also found on this site (e.g. knife-like hand axe of Quartzite No. 780 and a piece split from it No. 785).

So it can be seen that Site No. 6 RED. was a quarrying area and a place of manufacture of stone implements, as well as a source of raw materials to be taken to other areas on the island and worked.

This would explain the lack of shells on the site. Only sufficient molluscs would have been collected to alleviate their hunger during their work. It is probable too, that only men used to come to this site. If their families had come with them, there would have been more shells on the site - not only because there would have been more "mouths to feed", but because while the men were breaking and knapping the stones, the women and children would have had time to collect the molluscs.

* * *

Sites No. 8 and No. 40 RED. are quite near Site No. 6 RED. They are smaller in area and while Site No. 6 lies at the foot of the cliff at Cape Moreton, Sites No. 8 and No. 40 are located on the cliff itself: No. 8 on the slope and No. 40 on the cliff top edge above the Ocean.

Site No. 8 lies in an artificial hollow cut into the slope. This is probably an old quarry, since there are heaps of shells on the bottom of this cutting; continued or renewed quarrying would have destroyed or damaged these heaps. Large numbers of opercula or "cat's eyes" are to be found on this site too.

On Site No. 40 the cliff edge has been eroded by rains and layers of shells can be seen in many places. Here there are fewer traces of stone knapping and not many implements were found. There is a large percentage of shells of the Thaisidae family and a considerable number of Turbinidae among the various shells on this site.

* * *

Another site of interest on Moreton Island is Site No. 5 RED. This is a huge, very impressive "false heap" of shells - the largest on the island. It is the one usually shown to tourists who come to the island (via Tangalooma). It is more than 20 feet high and consists of shells of the Donacidae family. Remnants of a cultural layer, about $1\frac{1}{2}$ feet thick have been preserved. Behind the "heap" there is a large "talus deposit" of shells along the slope of the dune. But there is no sign of the point of exit of the cultural layer, from which this "talus" began. It has either been covered over with sand or has disappeared altogether. With regard to finding stone implements, though, this was one of the poorest sites. I did not find a single stone implement on the "heap" itself, which is rare for sites on Moreton Island.

* * *

The richest site on Moreton Island as regards stone implements is Site No. 3 RED., especially its southern part, registered as

Site No. 3(a) or 3(s). On the northern part of the site, on a slope of the dune facing the sea, there is a medium-sized "heap" of shells (Donacidae). On and near this "heap" are a quantity of stone chips, pieces of stone of the grindstone type, as well as a smaller quantity of finished stone implements. In the southern part of the site, the sand has been blown away down to the firm soil, which is the basis of the sand dunes. In contrast to the northern part of the site, here, there are hardly any shells, but a great many pieces of stone and finished implements. In all, I collected 52 implements from Site No. 3 REDCLIFFE. It was impossible to collect all of the many stone chips. Most of the finished implements were collected in the southern part of the site. This again indicates that the people did not necessarily live beside the shell "heaps". The distance from the top of the "heap" in the northern part of the site, to the centre of the area where stone implements abound is about 100 paces (230-240 feet).

In the category of sites on Moreton Island, rich in stone implements, mention must be made of Sites No. 4 and No. 25 RED. The first of these large sites gave 26 finished or half finished implements - the second 24. A lot of stone implements (28) were collected on Site No. 1 RED., but this is a "combination" of 3 smallish sites, reasonably close to each other and therefore registered under the one number with the additions of (a) and (b) for the two outer sites (northern and southern). Here, near Sub-site 1(b), I found the shattered remains of a human skull and part of the lower mandible. This skull will be discussed in more detail later. It is quite probable that the rest of the bones belonging to this skull are still somewhere in the sands. Further investigation could reveal this place. There is however, no evidence to show that the skull is of the same age as Site No. 1(b).

* * *

There are a great many sites on the Ocean side of North Stradbroke Island. But special attention should be given to a region of huge "false heaps" at Sites No. 65 and No. 66 BRISB. (in middle part of the island). Also in this area, some distance from the Ocean, is the large Site No. 69 BRISB. and a group of sub-sites and smaller sites. This suggests that this whole region was some sort of a centre for temporary or permanent habitation.

Site No. 65 consists of a huge "heap" of Donacidae (with some Thaisidae), but in actual fact what is preserved is part of a former cultural layer only about 1 foot thick. This remnant of a layer was preserved on a sand hill, the slopes of which are covered by shells falling from the top. Only two stone implements were found here and there were few pieces of stone or flakes (Plate III, Fig. 1).

Further south there is another large "heap", Sub-site No. 65(a). And still further south is another huge "false heap" No. 66 BRISB., together with large Sub-site No. 66(a). These sites were also poor in stone implements producing only one implement and several stone chips.

This area is situated at the most northerly end of the large so-called "18-mile Swamp", which separates the main, central part of the island from the sandy Ocean shore. Here the swamp consists of a group of small lakes surrounded by swampy areas, through and across which the Ocean beach can be reached. It is not strange therefore that this was the end of the old route from the western (inner) shore of the island. In fact there is a line of sites stretching across to the western shore from this group of sites. Not far from the Ocean beach lies a large site, No. 69 BRISB. Further still to the west is Site No. 68 BRISB. And on the other end of this old route, not far from the Moreton Bay shore lie Sites No. 29 and 29(a) BRISB. On these sites there are large numbers of Donacidae shells from the Ocean beach.

Hence the clustering in one area of two huge sites (65 and 66) with their sub-sites, the large No. 69 and a group of smaller sites, may be explained as follows:

(1) This place was suitable with regard to sources of fresh water.

(2) From here, the beach (a place for mollusc collecting) was easily accessible and following this,

(3) this was the end of the old route from the western shore to the eastern shore of the island.

On the strength of these premises, here was a logical stopping place, if not for lengthy periods, then at least for a rest, after a tiring journey across the island. Here also was the first place where molluscs could be gathered.

With regard to Site No. 65, it is interesting to note the following: between the dunes on the Ocean shore and the high inner part of the island is a clear lake which was once connected with the Ocean by a creek now blocked by a large sand dune. Part of the former outlet (from the lake to the dunes) still remains and is even now filled with stagnant water.

The history of this site may thus be traced as follows:

(1) There was once a lake with an outlet into the Ocean.

(2) The mouth of this outlet was gradually filled with sand until, eventually, the water ceased to flow out of the lake.

(3) The sand dune grew and became part of the high beach ridge.

(4) People settled on top of this dune, leaving a thick cultural layer, consisting chiefly of the shells gathered there.

(5) The wind eroded much of the loose sand and the preserved cultural layer on the hillock of sand formed a "false heap" covered with crumbling shells.

From this we derive the following: (a) since part of the former outlet remains and is still filled with water, it would seem that the dune closed the mouth of the outlet not so very long ago (geologically speaking). (b) Since the cultural layer of the former site is on top of the dune, it follows that the site is younger than the dune. If geologists could help us determine the age of the dune - the age of the site could then be determined.

* * *

A similar track from the eastern shore to the western shore can be traced in the northern part of North Stradbroke Island. A group of sites, Nos. 34, 33, 32 BRISB. form a sort of a line from the Ocean shore westwards into the centre of the island. Site No. 32 lies in the scrub, in a high position, but not far from the slope going down to the sea. Though not very large in area, it has a thick (more than 1 foot) cultural layer of shells (Donacidae). The top 2 or 3 inches of this layer are embedded in a dark brown sandy humic soil. The next layer of shells lies in 9-10 inches of almost black soil (grey forest soil?) which seems to have been buried by more recent sand deposits.

On a line from Site No. 32 to the Ocean beach, but at the bottom of the hills of the inner part of the island, in a swampy area, lies the small Site No. 33 BRISB. Apparently, in the past a swampy stream flowed through there, and was a source of water for Site No. 32. People probably did not live here, but used to stop either on the way from the site to the beach or came from the site to drink. Following the same line eastwards to the Ocean, we arrive at Site No. 34 BRISB. which lies on a remnant of the second, older beach ridge. This was a place for collection of molluscs, since the water line is only 40-50 paces away. It is possible that all three sites belonged to the same tribal group, who lived on the high site in the scrub, drank water at the bottom of the hills and gathered shellfish on the shore. The

distance between Site No. 32 and Site No. 34 is no more than $\frac{1}{4}$ mile. The main site, No. 32, was in the scrub, since this protected the dwellers from heat, wind and sand storms. It also provided the dwellers with wood materials for their shelters and for various implements.

* * *

The Ocean shore of South Stradbroke Island has few sites of interest. The majority of them are not large - in fact most are very small. Very few stone implements were found, most of the sites having none at all on them.

The "richest" site on South Stradbroke, No. 8 TAMB. gave only 8 implements, and of these some were only semi-implements. Sites No. 14 and No. 15 TAMB., in the northern part of the island, are the largest. But compared with the sites on North Stradbroke and Moreton Island they would only be called medium in size.

The families of shells on South Stradbroke Island sites are all the same, the majority, or sometimes all, are Donacidae with some Thaisidae. But on Site No. 1 TAMB., which is in the shape of an oval "patch" of shells (100 x 210 ft.), in the northwest part of the site, is a special place where Potamididae shells abound. The size of this place is no more than 10 x 12 feet. But Site No. 1, altough on the Ocean side, lies on a very narrow part of the island, so the Bay shore is no more than $\frac{1}{4}$ mile away; and the Potamididae shells could easily be brought over to the Ocean side. Here also were found a number of small, flat rounded pebbles. Eight of them were lying as if in a heap in an area of about 1 foot square. One might hence presume that these pebbles were of some special significance. I have called them "draughts" because of their outward appearance and also the possibility of their being part of some game. Such "draughts" are often found on Ocean sites, but only on this site in such a large number.

III. Sites on the "Inner" Shores of the three Main Islands of Moreton Bay

As has been said earlier, the western (inner) shores of North and South Stradbroke Islands are very different from those of the Ocean side. Here, the slopes of the high hills come right down to the water line of Moreton Bay. Only Moreton Island has a norrow stretch of beach, which is usually covered by tides. The beaches on the other two islands, occurring only here and there, are very narrow and dirty and are usually replaced by mangroves. Where, for some reason, the hills do not reach down to the shore, the low terrain between the hills and the shore is swampy. Because of this the outward appearance of the sites is quite different.

With few exceptions, the sites here are all similar in type. In most cases, the cultural layers, consisting of shells, do not appear on the surface, but are covered by a layer of blackish soil. Because of this, the sites are usually found accidentally, e.g. in the walls of a fallen away bank; on the washed away banks of a creek; on rain-eroded slopes; on tracks and roads, where the top soil layer has been worn away or cut away by any kind of soil removal etc.

Sometimes, odd shells can be noticed sticking out of the soil, but the finding of sites is further impeded by the thick cover of grass and bushy undergrowth on them. Because of this, the sites on the western shores of the 3 main islands are by no means all "discovered". But on the western shore of Moreton Island, there are in fact, few sites - most probably because of the poor water supply there.

With regard to further investigations, the sites of the western shores of these islands would be more suitable for excavation. Unfortunately they are very poor in stone implements (Plate IV, Fig. 2 and Plate V, Figs. 1 and 2).

The cultural layers on these sites, as on the Ocean sites, consist almost exclusively of mollusc shells. But the shells are of different families (Ostreidae; Arcidae; Potamididae and sometimes a few other types). There will be a more detailed discussion about shells later. Usually the cultural layer is not thick - from 1 to 6 inches in depth. Only on a few sites does the layer reach a foot or more in depth; but on a couple of sites, e.g. No. 1 and No. 8 BRISB., it does go down several feet. There are also sites where two cultural layers of shells, separated by a sterile layer, can be seen in a vertical section of the walls (Sites No. 1 and No. 2 BRISB., etc.). On Site No. 1 BRISB., a vertical section of the thick layer of the bank to the sea, showed that the lower horizons were composed of shells different from the ones in the higher levels. This will be discussed in more detail later. Similar observations were also made on other sites, e.g. those on Macleay Island, right inside Moreton Bay.

I am conditionally including 5 sites from the southern end of North Stradbroke with the sites of the inner shores of the 3 islands. These sites lie between the Ocean shore and the inner shore of the island; but in type they are more like those of the inner shore. In shell composition of the layers, 3 of them (Nos. 65, 74, 75 BEEN.) are closer to the Bay sites; the fourth site (No. 73 BEEN.) has an admixture of Ocean type shells; and in the fifth (No. 87 BEEN.), Ocean shells are in the majority.

The following is a description of the sites of the western shores of the 3 main islands, in the same order as was used for the sites of the Ocean shore:

(1) sites of Moreton Island (maps of REDCLIFFE, BRISBANE)

(2) sites of North Stradbroke Island (maps of BEENLEIGH and BRISBANE)

(3) sites of South Stradbroke Island (map of TAMBORINE).

MORETON ISLAND — INNER WESTERN SHORE

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
A. REDCLIFFE Map					
7	569.279	quite large	Arcidae (abs.major.); Donacidae only	only one piece of grindstone	Has Sub-site 71(a) on which there are quite a lot of Donacidae
B. BRISBANE Map					
79	612.096	not very big	Arcidae (majority); Potamididae (one Ostreidae one Veneridae two Naticidae)	some - quite a few grind-stones	Originally registered as No. 41 RED. Has some sort of setting of stones in oval shape

NORTH STRADBROKE — INNER SHORE — BRISBANE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
1	595.858	Very large	Ostreidae Arcidae Potamididae Mytilidae Donacidae & Naticidae	few	1962 and 1964 excavations made here by Univ. of Q'ld. Two layers of shells.
2	596.859	quite large	Potamididae Ostreidae Arcidae; a few Donacidae	none found	Two layers of shells
3	597.861	small	Ostreidae Arcidae Potamididae	none found	Almost destroyed by a cemetery.
4	598.862	small	Ostreidae Potamididae Arcidae and one Cypraeidae	none found	Almost destroyed by a square for Little Ship Club
5	600.863	not large	Arcidae Potamididae and a few Donacidae	none found	-
6	602.865	small	Arcidae Ostreidae Potamididae	none found	Not far from the site on the beach found pointed hand implement.
7.	608.874	small	Arcidae Ostreidae Potamididae	none found	An outcropping of cultural layer
8.	609.877	very large	Arcidae Ostreidae Potamididae	some	Very thick layer. 1963 excavations by U. of Q. students.

NORTH STRADBROKE — INNER SHORE — BRISBANE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
9	609.877	small	Ostreidae (majority); Arcidae Potamididae	none found	Has Sub-site 9(a)
9(B)	609.877	small	Arcidae (abs.major.); Potamididae	none found	Differs from Site 9 in shell composition.
10	623.888	quite large	Arcidae (abs.major.); Potamididae	none found	On high pass crossing of a hill sloping deeply to the sea. Visible cultur. layer.
11	627.892	very large	Arcidae & Potamididae	none found	Long with small breaks which is why its northern part is registered as 11(a). Has a layer.
12	603.867	small	Arcidae Potamididae	none found	Almost washed away
13	609.878	small	Arcidae & Potamididae	none found	-
14	610.878	small?	Arcidae Ostreidae Potamididae	none found	-
15	619.886	small	Ostreidae (majority); Arcidae & Potamididae	none found	-
16	621.887	quite large	Arcidae & Potamididae	none found	Visible cultural layer

NORTH STRADBROKE — INNER SHORE — BRISBANE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
17	612.879	small	Ostreidae Arcidae Potamididae 1 Donacidae	none found	Visible layer
18	597.860	small	Arcidae Ostreidae & Potamididae	none found	Washed away
19	624.889	small	Arcidae Potamididae and 1 Cypraeidae	none found	At bottom of hill on which is Site No. 10
20	615.880	quite small	Arcidae & Potamididae	none found	-
21	601.863	quite large	Ostreidae & Potamididae	only one semi-implement	Has a layer; site partly excavated.
22	608.872	quite large	Arcidae & Potamididae	none found	Outcrop of layer
23	608.874	small	Ostreidae Arcidae Potamididae	few	Destroyed by buildings
24	609.875	not very large	Ostreidae Arcidae Potamididae (few Donacidae)	none found	Clearly visible cultural layer
25	641.961	small	Potamididae (abs.major.)	none found	-
26	640.961	small	Ostreidae & Mesodesmatidae	none found	-
27	643.972	quite large	Potamididae & Ostreidae	none found	Damaged by road

NORTH STRADBROKE INNER SHORE BRISBANE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
28	649.972	small	Potamididae Ostreidae Arcidae	none found	Damaged by road
29	643.910	small	Donacidae (abs.major.)	none found	Has Sub-site 29(a)
30	606.871	small	Potamididae (abs.major.)	none found	-
31	609.872	small	Potamididae Ostreidae	none found	-
71	641.960	small	Arcidae Ostreidae Potamididae	none found	Very thin layer; has separate outcrop 71(a)

NORTH STRADBROKE INNER SITES BEENLEIGH MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
1	597.852	not large	Arcidae Ostreidae Potamididae	none found	Badly damaged by street laying (Dunwich)
2	602.849	large	Arcidae Ostreidae Potamididae	none found	Has a cultural layer
3	606.847	small	Potamididae Arcidae	none found	Large number of Potamididae
4	634.851	very small	Ostreidae (fragments)	none found	Damaged by street laying
62	614.673	small	Arcidae Potamididae	none found	High above the sea. Possibly landing place and resting place from sea.

NORTH STRADBROKE SOUTH SHORE BEENLEIGH MAP

Site No.	Mapping Ref	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
65	612.586	small	Arcidae only	none found	-
73	608.583	large	First trial hole: Donacidae (abs.major.); 2 Arcidae 1 Potamididae Second trial hole: Arcidae (majority); 17 Potamididae 4 Ostreidae only 2 Donacidae (holes 40 paces apart)	one implement found in second trial hole	Found in middle between Ocean and Bay
74	618.593	not very large	Arcidae (abs.major.); 2 Ostreidae	none found	-
75	616.590	small	Arcidae	none found	-
87	603.586	quite large	trial hole 55 Donacidae 9 Ostreidae	none found	Interesting composition of shell layer

SOUTH STRADBROKE — INNER SHORE — TAMBORINE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
6	606.330	not very large	Arcidae (majority); Ostreidae Potamididae (1 Donacidae)	none found	Has a cultural layer
7	605.331	quite large	Arcidae (majority); Ostreidae Potamididae (1 Donacidae)	none found	Has a layer
8	604.340	?	Arcidae (majority); Potamididae (a few Donacidae)	quite a few	Almost washed away
9	608.367	not very large	Arcidae (majority); Donacidae Potamididae, and a few Ostreidae	none found	In middle of island; damaged by construction
10	605.355	quite large	Arcidae (maj.); Potamididae a few Donacidae (1 Ostreidae)	none found	Layer preserved
11	605.354	quite large	Arcidae (abs.major.); Potamididae	none found	Has a layer
12	622.496	large	Donacidae Ostreidae (few Potamididae)	none found	Layer preserved
17	625.510	large	Ostreidae (majority); Donacidae Potamididae	none found	Has a Sub-site 17(a)

SOUTH STRADBROKE — INNER SHORE — TAMBORINE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
24	616.487	not very large	Donacidae (majority); Ostreidae	none found	Has Sub-site 24(a); layer preserved.
25	615.480	not very large	Ostreidae (majority); Donacidae Potamididae (a few Arcidae)	none found	Layer preserved
26	612.475	small	Donacidae (majority); Ostreidae Potamididae	none found	Layer preserved
27	604.467	large	Ostreidae Arcidae Potamididae Donacidae	none found	Layer preserved
28	613(614?).490	small	Donacidae (majority) Ostreidae	none found	-

So in all, there are 58 sites for the inner (western) shores of the 3 main islands, including 5 sites on the southern end of North Stradbroke Island. Several places on these islands were left uninvestigated and more sites could certainly be found.

Of the sites on the inner shores, we should first consider No. 1 BRISB. on Polka Point near Dunwich. I will mention it but briefly since this site was "found" before my investigations and has already been the object of two excavations - the first under Dr. D.J. Tugby's supervision, in 1962, and the second under Mr. John Clegg in 1964. Since the results of these excavations were certainly of value and exact, I will content myself with only a few remarks about the site.

Site No. 1 BRISB. is one of the largest sites on North Stradbroke Island. A considerable part of it has been washed away by the pounding of waves; and much has been dug away in the process of

building the town of Dunwich. Part of this site lies on the slope of the fairly high Polka Point - part on the lower shore of Moreton Bay, above the water line. This is the part which is crumbling from the effect of the waves pounding on it from below, as well as from excavations for road building.

The waves beating against the bank have revealed a considerable layer of shells, continuing for quite some distance. The northern end of the site is near swampy creek No. 1 (no name), which flows into the sea (Plate IV, Fig. 2).

In its central part, the layer reaches a depth of 3 feet. In a cutting, Location No. 2 (170 feet south of the creek), the following can be seen: on a level with the now water-flooded beach is a sandy, marshy deposit which has rust-coloured "moiré-like" streaks on it. The next level consists of grey, uncemented sands. Above the sands (Location No. 2) is a thick layer (more than 20 inches) of shells, which clearly consists of two horizontal levels of shells, separated by an almost sterile seam containing only pieces of broken shells. The top cultural layer is covered by thin top-soil only 2-3 inches in depth.

This upper level of shells consists mainly of Ostreidae and Arcidae shells plus some Potamididae which are also to be found in the lower level. This latter level contains a great number of Mytilidae shells, which are rare in the upper level.

In Location No. 1 (2 feet south), the upper (7 inches deep) and lower (3 inches deep) cultural layers are again visibly divided by an empty seam of black soil, about 4 inches thick.

Location No. 3 (24 feet to the north) also has two horizontal cultural layers - the upper, 8 inches deep, the lower, 9-10 inches deep, and the dividing layer, 8 inches deep, consisting only of shell fragments. Here too, the lower cultural layer contains a large number of Mytilidae shells.

Site No. 1 BRISB. was thus inhabited during at least two different periods - the site remaining empty for some time between the first and the second occupation. The first and the second groups of inhabitants fed on different types of shellfish. More will be said of this when describing the shells. Animal bones, and what is more interesting, fish bones are very rarely found in the cultural layers and them only singly or a few together. Only a few stone implements have been found, but this site deserves further investigation.

North of Site No. 1 BRISB., beyond the creek, is Site No. 2 BRISB., found on 10th April, 1963, on my first day of investigation. It could have been included with Site No. 1 except that the cultural

layer of the latter ends before the creek is reached - which is why No. 2 BRISB. was registered as a second site. This too is a large site, but smaller than No. 1 BRISB. Here too, there seem to be two cultural layers, the upper one 2-3 inches deep and the lower about 4 inches deep. In the 8 inches of black soil separating the two layers is a thin seam, about 1 inch thick which goes obliquely across it in a northerly direction. There is no noticeable difference in the shell composition between the two cultural layers in this site (the usual Ostreidae, Arcidae and Potamididae). Shells of the Mytilidae family are practically non-existent and the odd Donacidae from the Ocean side occur only here and there. A few broken stones, but no stone implements were found. Whether this site is younger than Site No. 1 BRISB., because of the difference in shell composition, I am not at present prepared to say.

Of the other sites, No. 8 BRISB. on North Stradbroke Island, is worthy of mention. This too was found on my first day of investigation It is a large site with a thick cultural layer, but badly damaged by road construction and that of a windmill and sawmill. Dr. D.J. Tugby and students conducted excavations here in May 1963. The results of these excavations are not yet published. The shells in the cultural layers, from my observations, are Arcidae, Ostreidae and Potamididae. Few stone implements were found.

Site No. 10 on North Stradbroke Island is of interest because it is located on the side of a high ridge with very steep slopes - especially the slope to the sea. Fresh water is about 1 mile away - but is at the bottom of the ridge and rather difficult to get to. This was probably a place of some ceremonial significance though no ceremonial structures were found.

Also on North Stradbroke Island, but nearer its southern end, is the quite small site No. 62 BEEN. In spite of its size, it was almost certainly a point of departure when crossing from North Stradbroke to Russell Island. The site itself is situated on a high ridge; but below it there is a convenient landing place from the sea and fresh water springs.

Of the 5 sites on the southernmost tip of North Stradbroke Island, particular mention may be made of Site No. 73 BEEN. It covers a huge area (N-S 260 yards, E-W 200 yards) but has only a thin cultural layer - about 2-3 inches deep. In places, the cultural layer disappears altogether. It is interesting to note that in some parts of the layer the shells are exclusively those from Moreton Bay - while in other parts, not far away, there are large numbers of Donacidae from the Ocean side.

Sites on the western side of South Stradbroke are not usually very large, although their cultural layers of shells are well

preserved (Plate V, Fig. 1). It is interesting to note, that on some sites the majority of shells is Ostreidae, whereas on others they are mainly Arcidae. Probably this is because one or the other type shellfish was to be found on the shallows close to the particular site. This too, I will discuss later, when describing the shells found on the sites.

Few stone implements were found on sites on the western shore of South Stradbroke Island. Only Site No. 8 TAMB. gave any number of note, and this site is almost non-existent now because of wave erosion.

* * *

IV. Small Islands Within Moreton Bay Itself

The islands I investigated inside Moreton Bay are the following: Macleay Island, Russell Island, Coochiemudlo Island, Perulpa Island (which belongs to a cluster of smaller islands in the southern part of the Bay) and Peel Island, which is somewhat north of this group - here I investigated only its southern part. Several smal islands remain uninvestigated, but the majority of these looked unsuitable for habitation of any duration.

The first 5 islands listed above, are in the southern part of the Bay and appear to have once been part of the mainland. They are in no way like the 3 main outer islands. These 5 islands are rocky and except for Coochiemudlo are devoid of sandy beaches, and have mangrove swamps instead. The sites on these islands are usually small.

* * *

Macleay Island

I paid most attention to the southern part of this island. I did drive all over the island, but the roads went through the bush and any sites would have been difficult to see. I did register a tiny site No. 85 BEEN. on the most northerly tip of the island (Pat's Point) - in the humic sands of which I found Potamididae and Ostreidae shells. In all, I registered 11 sites on Macleay Island, but 5 of them (Sites No. 68-72 BEEN.) are situated close to each other as if forming one huge complex site. But I registered them separately because there are stretches between them which do not have a cultural layer.

Below is a list of the Macleay Island sites in numerical order. Also included is one site from Perulpa Island which is now almost joined to Macleay Island - separated only by a swampy passage.

SITES ON MACLEAY ISLAND				BEENLEIGH MAP	
Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
68	563.704	quite large	Mytilidae Ostreidae Potamididae	one only	Mytilidae on top; thick cultural layer but damaged by plantation.

SITES ON MACLEAY ISLAND — BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
69	564.704	?	Ostreidae (majority); Potamididae	none found	Almost destroyed by banana plantation.
70	562.704	quite large	Ostreidae (majority); Potamididae	none found	Cultural layer preserved
71	562.705	not very large	Ostreidae (majority); Potamididae	none found	Cultural layer preserved
72	564.705	not very large	Ostreidae (majority); Potamididae	none found	Cultural layer preserved
78	544.705	?	Ostreidae Potamididae	none found	Almost destroyed by ploughing
79	547.718	quite large	Arcidae (majority); Ostreidae Potamididae	one found near the site	Almost destroyed by ploughing
80	546.718	?	Arcidae	none found	Almost destroyed (road)
81	555.695	small	Ostreidae (majority); Potamididae	none found	Cultural layer preserved
82	553.695	quite large	Ostreidae (majority); Potamididae	none found	Centre of site under a house. Cultural layer preserved in parts.
85	550.756	very small	Ostreidae Potamididae	none found	No clear layer

SITE ON PERULPA ISLAND — BEENLEIGH MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
77	562.717	large (175 ft. x 175 ft.)	Ostreidae (abs.major.) Potamididae	none found	-

The 5 sites on Macleay Island (Nos. 68-72 BEEN.) lying side by side are to be found in the South-east part of the island not far from Lucas Passage - which divides Macleay Island from Lamb Island - near Mr. Robinson's farm. The sites in themselves are not large, No. 72 being somewhat larger than the others (100 x 120 feet). Sites No. 68, 70 and 71 are almost side by side. Site No. 69 is almost destroyed by a plantation. No. 68 and No. 72 are interesting in that large numbers of shells of the Mytilidae family are to be found on them; and on Site No. 68 they are in the upper level - the reverse of the sequence at No. 1 BRISB. on North Stradbroke Island, where they were on the lower level. But since No. 68 has been badly damaged by the plantation, further excavation is necessary for a more exact determination of the composition of the cultural layer.

On Macleay Island, too, there are sites which have a majority of Ostreidae shells and others with a majority of Arcidae shells. More details of this will be given later when the shells are discussed fully. Very few stone implements were found here.

* * *

Perulpa Island

The only site here, is to be found in the bush on the north-eastern part of the island. It is quite large (175 x 175 feet) and has a fairly thick cultural layer in its north-east corner at the top of a steep slope which ends in the mangroves on the shore. The cultural layer is up to 10 inches thick and begins almost from the surface. This site appears not to have been disturbed by any earth works and because of this is of value.

* * *

Russell Island

This island was investigated rather carefully in its northern section and part of its eastern section. In the south I investigated the interior of the island. All sites found and

registered are in the vicinity of Canaipa Point. None of these sites are large, except perhaps for No. 64 BEEN. But this site has been ploughed and only parts of the cultural layer remain in the undergrowth on the edges. In the ploughed land though, the owner Mr. Holland, and I, found several stone implements. These included stabbing implements of the spearhead or dagger type (e.g. No. 310).

Sites No. 61 and 63 BEEN. are located on one of the narrowest parts of Canaipa Point; one on the Canaipa Passage side and the other on Ooncooncoo Inlet. It would seem that these sites served as landing places as they are on either side of a mountain pass from one part of Moreton Bay to the other. Otherwise the people would have had to circumnavigate the long neck of the Canaipa peninsula.

Site No. 55 BEEN. is near the home of a Mr. Brown. It consists of 4 small areas - 3 of which stretch along the shore of the Bay, while the fourth is on a hill. On this latter site, Mr. Brown found a well made, partially polished stone axe. Site No. 55 is located opposite and across the passage from Site No. 62 BEEN. on North Stradbroke Island, which in turn is opposite Site No. 60 on Russell Island. So it may be presumed that the people sailed to Site No. 61 on Russell Island - then disembarked and carried their craft across the narrow stretch to Site No. 63, from where they sailed along the shore of Canaipa Passage to Sites 60 and 55 and from there crossed the passage to North Stradbroke Island landing near Site No. 62.

SITES ON RUSSELL ISLAND — BEENLEIGH MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
55	607.683	combined site	Ostreidae (abs.major.); Arcidae Potamididae	stone axe head	Consists of 4 sections
60	604.680	not very large	Ostreidae Potamididae Donacidae (?)	none found	In 2 sections A and B
61	595.680	not very large (25 ft. x 40 ft.)	Ostreidae (abs.major.); Potamididae 1 Donacidae	none found	Cultural layer preserved

SITES ON RUSSELL ISLAND — BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
63	596.681	small	Ostreidae Potamididae	none found	-
64	592.678	quite large	Ostreidae Potamididae	some	-
83	596.684	small	Ostreidae	none found	Doubtful ?
84	596.686	small	Ostreidae Potamididae	none found	-

Lamb Island

I registered 3 sites on Lamb Island which is quite small. Only one of these sites No. 54 BEEN. on the very tip of the island (North Point) could be called large. Its cultural layer of shells consists solely of Ostreidae shells, which is somewhat remarkable. Site No. 52 BEEN. was very small when I found it, but I have been told by the locals that a large "patch" of shells existed in the grass and bushes when this place was being ploughed. I have not been able to find any trace of this.

The following is a list of sites on Lamb Island, including the only site found on Coochiemudlo Island.

SITES ON LAMB ISLAND — BEENLEIGH MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
52	573.703	small	Ostreidae (majority); Potamididae	none found	Told of another place nearby but not found
53	576.711	not very large	Ostreidae (majority); Potamididae	one found	-

SITES ON LAMB ISLAND — BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
54	575.713	large	Ostreidae only (?)	none found	-

SITE ON COOCHIEMUDLO ISLAND — BEENLEIGH MAP

92	515.765	small	Ostreidae Potamididae	none found	No clear cultural layer

On Coochiemudlo, I found no "real" sites. There are a few places where shells, mainly Ostreidae and Potamididae are to be found in various quantities. One place, somewhat larger than the others, is registered as Site No. 92 BEEN. - although there is no clear cultural layer of shells. There is a fairly large heap of Ostreidae shells on this island, but it gives the impression of being quite recent. Near-by are the remains of modern habitation (house stumps). Oyster farming is now carried out in this part of the Bay.

* * *

Peel Island

On Peel Island, only the southern section was looked at. Seven sites were registered, and one sub-site, which differed from its parent site by the shells found on it. Most of the sites on Peel Island are small, being mainly "patches" of shells on the beach ridge. Several of them differ from sites on other islands; masses of shells of the Mesodesmatidae family were found on them. On Sites No. 94 and 99 BEEN., they were the only shells found. On Site No. 95 BEEN., they are an absolute majority. On the other sites, the shells are of the usual mollusc families - Ostreidae, Potamididae and Arcidae and occasionally even the Mytilidae shell is found.

It is interesting to note that all of these shells are to be found on Sub-site No. 94(a), while Site No. 94 beside it consists solely of Mesodesmatidae shells. Reasonably large sites on Peel Island are No. 97 BEEN., in the bush not far from the jetty, and

Site No. 98 BEEN. on the shore. The former has been badly damaged by cable laying; the latter is undamaged and has a cultural layer reaching 24 inches and more in depth. No stone implements were found on Peel Island sites.

Below is the list of sites found on Peel Island.

SITES ON PEEL ISLAND — BEENLEIGH MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
93	563.853	small	Ostreidae Arcidae Potamididae	none found	-
94	557.854	small	Mesodesmatidae	none found	-
94(a)	556.854	not very large	Ostreidae Arcidae Mytilidae Potamididae	none found	-
95	555.854	not very large	Mesodesmatidae (odd shells of other types)	none found	"Heap" of shells
96	532.841	small	Ostreidae Potamididae	none found	Almost destroyed by road construction. Potamididae are in majority.
97	533.840	large	Ostreidae (majority); Potamididae Arcidae Mytilidae	none found	Badly damaged by cable laying
98	539.843	large	Mytilidae Ostreidae Potamididae	none found	Cultural layer preserved; has Sub-site 98(a).

SITES ON PEEL ISLAND — BEENLEIGH MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
99	550.852	small	Mesodesmatidae	none found	-

* * *

V. Sites on the Mainland in the Southern Region of Moreton Bay

As was said earlier, my investigations on the mainland were carried out in selected areas. The investigations here began in the region north of Southport where I registered 22 sites. This district was studied in greater detail than the areas around the mouths of the Logan and Coomera Rivers. The latter districts are not heavily built up, cultivated and fenced in and many sites have been completely destroyed.

(1) In Hollywell district 22 sites
(2) In Paradise Point district 5 sites
(3) In Coombabah Lake district 6 sites

The following is a descriptive list of the sites of Southport district.

SITES IN REGION NORTH OF SOUTHPORT — TAMBORINE MAP

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
29	587.375	not very large	Ostreidae Arcidae Potamididae	few	Hollywell region; cultural layer preserved.
30	586.376	small	Arcidae (majority); Ostreidae Potamididae	none found	Hollywell region
31	585.377	not very large	Ostreidae (majority); Arcidae Potamididae	few	Hollywell
32/33	585.379	large	Top layer: Ostreidae (abs.major.); 2 Potamididae Bottom layer: Arcidae (abs.major.); Ostreidae & Potamididae	none found	2 cultural layers of shells (Hollywell)

SITES IN REGION NORTH OF SOUTHPORT TAMBORINE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
34	546.380	small	Ostreidae (majority); Arcidae Potamididae	none found	Hollywell district. Washed away by water.
35	587.373	?	Ostreidae Arcidae Potamididae	none found	Hollywell. Damaged by building.
36	587.370	not very large	Ostreidae Arcidae Potamididae	none found	Hollywell. Damaged by canal building.
37	588.369	?	Ostreidae (majority); Arcidae Potamididae	none found	Hollywell. Washed about by water
38	584.328	small	Arcidae (abs.major.); Ostreidae Potamididae Odd Donacidae	none found	Paradise Point
39	582.385	not very large	Ostreidae Arcidae Potamididae	none found	Paradise Point; partially washed away.
40	585.387?	?	Arcidae Ostreidae Potamididae	none found	Paradise Point; damaged by road.
41	574.385	very large	Top Level:Ostreidae (abs.major.);Arcidae & Potamididae Bottom level: Arcidae (abs. major.);Potamididae	large number	Paradise Point; partially damaged.

SITES IN REGION NORTH OF SOUTHPORT — TAMBORINE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
42	516.370	large (75ft. x 150ft.)	Ostreidae Arcidae Potamididae	none found	Hollywell district
43	576.375	quite large	Ostreidae Arcidae Potamididae	one only	Hollywell district; has Sub-site 43(a)
44	575.378	large	Arcidae (abs.major.); Potamididae and a few odd Ostreidae	none found	Hollywell district
45	574.382	medium	Ostreidae (abs.major.); Potamididae	none found	Paradise Point
46	555.374	not very large	Arcidae (majority); Ostreidae Potamididae	none found	Oyster Lake (Coombabah)
47	557.375	large; together with Sub-site 47(a) more than 400 ft. long	Arcidae Ostreidae Potamididae	none found	Oyster Lake (Coombabah)
48	554.374	not very large	Ostreidae Arcidae Potamididae	none found	Oyster Lake (Coombabah). More Arcidae in bottom level
49	537.376	?	Arcidae (majority); Ostreidae Potamididae	none found	Oyster Lake (west shore); washed about by waters

SITES IN REGION NORTH OF SOUTHPORT — TAMBORINE MAP contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
50	539.366	large (350 ft. along beach)	Ostreidae (majority); Arcidae Potamididae	large number	Coombabah Lake. Real "heap" of shells over 4 ft. high
51	522.353	small	Ostreidae (majority); Potamididae	none found	Coombabah Lake

Sites in Hollywell itself and in the surrounding district are not very large, except for Site No. 32/33 TAMB. Many of them have been eroded by waves or else have been damaged by various constructions. On Site No. 32/33 TAMB. there is a fairly thick cultural layer which seems to consist of two separate levels. Ostreidae shells are in the majority in the upper level and Arcidae are the main shells in the lower level. Sites No. 42, 43 and 44 lie in the scrub, north-west of Hollywell. They are situated on a sandy ridge with a thick turf and humic layer of soil on top. Two of the sites, Nos. 43 and 44 are in a good state of preservation, especially No. 44. It is interesting to note that the cultural layer on this site consists almost exclusively of Arcidae shells with a few Potamididae. In a trial pit on Site No. 43 TAMB. a percuteur, in the shape of a flat pebble was found among the shells in the cultural layer.

Sites on Paradise Point, along the shores of Moreton Bay are not very large and are also damaged by road construction. On Site No. 38 TAMB. Arcidae shells are in the majority as on the above mentioned Site No. 44 TAMB. Since the shortest route from the latter to the shore leads to Site No. 38, it is possible to surmise some connection between the two sites - one in the scrub, the other on the shore. Distance between the two is no more than $\frac{1}{2}$ mile.

Two sites, Nos. 41 and 45 TAMB., lying to the west of Paradise Point, are quite large. Site No. 41 is badly damaged by quarrying, but some parts still remain. A large number of stone implements were collected here, as well as what appears to be a small piece of part of a human skull. The cultural layers on this site also show a difference in shell composition between the upper and lower horizontal levels. And just as in the other sites, the

Ostreidae shells are in the upper level, while the Arcidae are in the lower one (Plate V, Fig. 2).

It is interesting to note that Site No. 45 TAMB., lying almost beside it, has hardly any Arcidae shells (at least there were none in my trial pit). Here, there were only Ostreidae shells and a few Potamididae.

* * *

In the Oyster Lake district, 3 of the sites are to be found under the roads of the Esplanade at Coombabah and because of this are badly damaged. Only Site No. 47 TAMB. could have been large. On Site No. 48 TAMB. it was again observed that Ostreidae shells were in the majority in the upper level of the cultural layer and Arcidae in the lower. Site No. 49 TAMB. lies on the opposite shore of the lake;* here the Arcidae shells are predominant.

Only two sites were registered on Coombabah Lake. Site No. 51 TAMB. is very small, but Site No. 50 is very large and deserves attention. It stretches for about 350 feet along the shore, but it is difficult to estimate its width since part of it has been washed away. In its middle, close to the shore is a large mound of shells, mainly Ostreidae. This is one of the few <u>real</u> shell mounds which I have registered and not the false "heaps" often met with on the islands. The mound here, about 4-5 feet high, consists solely of shells. Its base stretches for about 120 feet along the shore, but its breadth is not great since it has been partially washed away. But it is clear that it was never really very wide and the whole mound had an elongated shape north-south.

So here we have a new type of site, with a mound of shells in its centre.

* * *

<u>Regions at the Mouths of the Coomera and Logan Rivers</u>

As was said earlier, only a few excursions were made into this area. Because of this, only 8 sites, including one or two doubtful sites, were registered, although this district is just as large as the former. The enumeration of these sites is from BEENLEIGH and TAMBORINE district maps.

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* This "lake" is actually a natural canal between Coombabah Lake and the sea, but is called Oyster Lake.

The following is a list of sites in the district.

SITES ON LOWER REACHES OF COOMERA AND LOGAN RIVERS

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
TAMBORINE Map					
52	550.426	large	Ostreidae (majority); Arcidae Potamididae	some	Coomera River region. Real mounds of shells. Has Sub-sites 52(a) and 52(b).
53	556.424	quite large	Ostreidae Potamididae	none found	Coomera River. Real mounds of shells and area covered with shells.
54	520.515	?	Potamididae (majority); Ostreidae 1 Arcidae	some	Near P.Smith's farm, Coomera River; almost destroyed by quarrying.
BEENLEIGH Map					
88	642.597	very small	Ostreidae	none found	Logan River
89	415.622	?	?	some	Logan River. No visible out-crop of layer.
90	494.705	very small	Ostreidae Potamididae	none found	Redland Bay
91	498.687	not very large	Ostreidae Arcidae Potamididae	one implement and chipped stones	Redland Bay

SITES ON LOWER REACHES OF COOMERA AND LOGAN RIVERS contd

Site No.	Mapping Ref.	Site Category	Shells in Cultural Layers	Stone Implements	Various Comments
Unexplored place	535.673	?	?	polished stone axe (given)	Cabbage Tree Pt. between Coomera and Logan River

Thus we have 3 sites in the Coomera River District, 4 in the Logan River district and one uninvestigated site, from which I was given a polished stone axe (No. 1075). It was found by Mr. Zilmann and given to me by Mr. L.P. Ebdon of Alberton. This is the site not included in the count of 281 sites which I personally investigated.

Of the Coomera River sites, No. 52 and No. 53 TAMB. are worthy of attention. Site No. 52 TAMB. is large and has two sub-sites registered as Sub-sites 52(a) and 52(b). On the bank, near a channelled part of the Coomera River there is a mound of shells. This is not a false "heap", but has the appearance of being heaped up on the steep slope of the bank, which is why its top is almost level with the slope. From below it gives the impression of being quite high and a more correct term for it would be a "shell mound on a slope".

The majority of shells in this mound are Ostreidae. Stone implements were found in the forest, not far from the mound.

Site No. 53 TAMB. is badly damaged by building of fisherman's huts. It is situated about one mile from Site No. 52, lower down along the channel. There could have been a shell mound where a hut now stands, but it would have been levelled off. A few paces away from this, there is a "shell mound on a slope" as on Site No. 52. The absolute majority of shells here is Ostreidae. No stone implements were found.

Site No. 54 TAMB. is almost destroyed because of quarrying. It is of interest because the majority of shells here are Potamididae. There are 4 sites in the Logan River area - excluding the site I did not see. Two are in the Redland Bay district a little to the north of the Logan River. They are quite small. There was no cultural layer on Site No. 89 BEEN., but 3 polished stone axes were found here, one of which was given to me by Mr. Roze. It is quite probable that other stone implements were also found here, but thrown away because they were not recognized as such.

* * *

VI. Bora Rings

Besides looking at archaeological sites in the district, I also registered several places of interest. I was shown quite a few places where there used to be special ceremonial structures usually known as Bora Rings. Unfortunately the majority of these no longer exist. The first place looked at was on Gibson Island near an electric depot for Brisbane, where I found the following: in the north-eastern part of the island, not far from the banks of the Brisbane River is a mound of earth in the shape of a hollow ring of which the outer diameter is 32 feet. This mound is 3-4 feet higher than the surrounding terrain. The width of the mound itself is about 10 feet.

About 85 feet south-east of this ring is some sort of a round mound, like a small hillock with a flattened top. This is about 20 feet in diameter.

There is no visible cultural layer, but near the Ring, inside it, and near the flattened hillock odd Arcidae shells can be found. Such shells can also be found in other places on the island. Since this is in the greater Brisbane area it is difficult to come to any real conclusions about these places until more careful investigations are made.

The second Bora Ring looked at is in the Nudgee district. Here in a swampy area, part of which is now a sports field, is another earthen structure in the shape of a hollow ring, 85 to 90 feet in diameter. The width of the actual ring is 6-7 feet. The level seems to be lower inside the ring than outside it. I got the impression that the earth for making the ring was taken from the inside. It must be said that the whole structure is rather dilapidated by diggings. The sports field has almost come up to it and the land surrounding it has been dug away to level the sports field. Beyond the Ring are excavations and dumps.

It is usual to find two Bora Rings in the same area - but here there is only one. Possibly the other may have been destroyed long ago. On the swampy edge of the sports field, about 30 paces away from the Bora Ring, I found several pieces of stone which have the appearance of semi-implements. But since there has been a lot of earth work here, these stone pieces may have been brought from another place. Apart from making further investigations here - the "Bora Ring" should be placed under Government protection to prevent further damage. This is said because a Bora Ring of note was lost in the Alberton district. At one time this was one of the most important structures of its kind. When I arrived at the site indicated by the local inhabitants (in March 1964), all I could find was a pineapple plantation owned by Mr. Inklemann, some buildings and a large hole along the edge of which lay some large stones. On the ploughed field, I found several stone implements. According to the

local people, about 6 years ago there was a large Bora Ring made out of earth in the shape of a ring, about 70-80 feet in diameter. About 80-100 feet south from this, was a smaller Bora Ring laid out of large stones. In the centre of this was what the locals called a "stone hut", consisting of several large stone slabs and with a stone roof. From these descriptions one gets the impression that here was something like a Dolmen construction of Europe.

When this place was being cleared, it is said that human bones were found after pulling down this "hut". Now this unique site of historic significance is lost.

A large number of Bora Rings have been lost in a similar manner in the Brisbane area. I have not been able to reach several places where I have been assured Bora Rings exist, because of swamps or lack of paths to them. I was told that there used to be a Bora Ring on Canaipa Point, near Site No. 60 BEEN., but that it had been washed away by high waves. I went to this place and what was indicated as the remnants of a sandy Bora Ring, seemed to me to be a beach ridge which had conveniently happened to form into a semi-circle. It is still in the process of being destroyed by waves. Local inhabitants often confuse the term "Bora Ring" with that of "Bora Ground", the latter being the name they frequently give to a site. This once happened when I was taken to a "Bora Ground" which was in actual fact a site and what is more, one that had already been registered by me.

* * *

VII. Shells and Other Kitchen Remnants from Sites in Moreton Bay

The main surface sign of a site in the areas investigated is that of a deposit of mollusc shells. Bones of animals and fish sometimes occur amongst the shells, but in minute quantities. The number of families of molluscs used by the people as food was not large. There was not even a need, in my survey, to make an exact count of shells. It was usually obvious from first glance, which shells formed the majority of the "kitchen remnants" on the site. In all, there are only 4 main families of molluscs which played a significant role in the lives of the ancient inhabitants of Moreton Bay. A few others are met with in very small quantities or else only on odd sites.

The 4 main families of molluscs were: Donacidae in the Ocean shore, and Arcidae, Ostreidae and Potamididae on the Bay side. The latter, Potamididae, were sought more for their shells as tools than as a source of food.

Other shells were those of the Thaisidae family on the Ocean side and Mytilidae on the Bay side. These were only met with on a few sites.

The Mesodesmatidae family (small shells) was found on a few sites on the southern end of Peel Island. The Turbinidae family (2 species - turbo petholatus and ninella torquata) was only found on 3 sites near Cape Moreton (Sites No. 6, 8, 40 RED.) on Moreton Island.

Other shells occurred in such minimal quantities as to be an odd one in a mass of shells. Those of the Naticidae family were most often in this category.

Thus it seems that the shells usually found on the sites and which formed the majority in the cultural layers were those of molluscs which exist or existed fairly close to the sites.

It is interesting to note that of the 4 families of molluscs whose shells are found in great numbers on the sites, 3 types are considered edible to the present day; not only by Aborigines but by Europeans as well (Ostreidae, Donacidae and Arcidae). In East Asia (China, Japan, Korea etc.) they are considered delicacies. The shells of the fourth family, Potamididae were used as tools, although of course the flesh of the mollusc was eaten.

* * *

Shells of the Donacidae family, locally called "ugaries" form the main mass of shells on sites on the Ocean side. On many of these sites Donacidae only are found. It would seem that a fondness for these shellfish brought inhabitants from the Bay side and even from the mainland, over to the Ocean side to collect them. In any case, Donacidae, which do not exist in the Bay, were found in quantities on several of the Bay sites. Thus, Donacidae shells were found on Sites No. 1 and 2 BRISB. (North Stradbroke Island), 7 miles from the Ocean shore; on Site No. 7 RED. (Moreton Island), 6 miles away from the Ocean, etc. From the mainland, it would have been necessary for them to have sailed across a certain part of the sea. But it must be said, that Donacidae could have been brought to the mainland sites from some of the open beaches south of Southport, as well as from the islands. Donacidae exist to this day along the Ocean beaches of Moreton Island and North and South Stradbroke Islands. Present day fishermen use them for bait.

I was told the following by an old fisherman Mr. Kitaev: ugaries are widely spread along the sandy Ocean beaches of the islands. They live in colonies, which is why there are few in some places and hundreds in others. After a wave has receded from the beach, they can easily be felt with the foot. Besides this, tiny holes are visible where the ugari has dug in. After exhausting the ugaries from one spot, it is abandoned by the fishermen, but after some time the ugaries

return. When being collected in large numbers, they are often raked out with home-made rakes. So it can be seen that the collecting of ugari - Donacidae is not difficult and the Aborigines probably collected them in the same way - even children were expert at it.

* * *

The Ostreidae and Arcidae families belong to the molluscs found in the inner Bay area. The latter also exist or used to exist in the Swan Bay area, a small bay in southern North Stradbroke Island.

Oysters (Ostreidae) are found close in shore, where the water is less salty. Usually they cling to rocks or other solid objects, or else grow onto each other. Many parts of Moreton Bay are suitable for oyster growing, since, not only are the shells of this mollusc found on the sites, but oyster farming continues there to this day.

Since oysters multiply very quickly, they would have been in plentiful supply for the Aborigines. But on the sites, oyster shells are usually found in conjunction with shells of another family - Arcidae.

Arcidae are also found in the Bay, close to the shore, but live mainly on the muddy bottom. There is a plentiful supply of Arcidae in the Bay. This must also have been so in the past because of the large quantities of their shells found on the sites.

It is interesting to note that one often comes across sites whose cultural layers consist only of Arcidae shells while nearby sites have only Ostreidae shells in their layers. This could have been a result of the consistency of the sea floor in the area. Possibly, people who had exhausted, say, the Arcidae near their site, would go to another area where Ostreidae could be obtained. So the choice of a site location was dependent on the availability of molluscs near it. And the continued occupation of a site was dependent on a continued supply. But the fact that mixtures of Arcidae and Ostreidae shells were found on some sites, indicates that the people had several areas of collection of molluscs, which they used while staying on the same site.*

Another interesting observation is that on many sites, Ostreidae shells form the upper level of the layer and that Arcidae shells form the lower level. This has been noted both on the islands and on the mainland.

Whether this was dependent on the geographical condition of the Bay, is too difficult to say. It could be supposed that people

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* There are places where both Arcidae and Ostreidae are to be found in the same beds.

living in a nearby site exhausted a particular mollusc colony and the area was then taken over by molluscs of another family. But why we always find that Arcidae shells are always followed by Ostreidae shells in the cultural layers, is so far unexplainable.

* * *

Molluscs of the Potamididae family are widespread over Moreton Bay. The species Pyrazus ebeninus are predominant here. They occur but rarely and only in a few of the sites on the Ocean side. It would seem that the people brought them over from the inner shores of the Bay. They are often found attached to Ostreidae shells, indicating that they can grow in the same places; although Potamididae usually live in rather muddy parts of the sea bed, i.e. closer to the Arcidae.

The flesh of the Potamididae is encased in a long screw-like shell (up to 10 cm or longer), which has a very hard and pointed end. The majority of Potamididae found on the sites have this sharp point broken off; which gives the impression that they were used as some sort of tool. Perhaps they were used for piercing, perhaps to open the shells of other molluscs. In support of the suggestion that these shells were used for some sort of work we can cite for example the observation made on Site No. 54 TAMB., where to my surprise I found hardly any other shell but Potamididae. As the flesh of this mollusc is not large and rather difficult to draw out of the shell because of its screw-like formation, it would be strange to credit that they were brought from the shores for food. (Site No. 54 TAMB. is situated in the scrub, several miles from the shore.) Other shells, more suitable for food, could have been brought from the shores instead.

On Site No. 1 TAMB., on the Ocean side of South Stradbroke Island, there was also a particular spot where Potamididae were found in large numbers. More edible Donacidae molluscs could have been collected in large quantities not far from the site itself. And if there had been reason to bring food from the western shore, they would have brought supplies of the more edible molluscs, e.g. Ostreidae or Arcidae. But it seems they had some particular reason for bringing the sharp pointed Potamididae.

* * *

Besides the already named molluscs, shells of the Mytilidae family are to be found on several sites, Mytilidae also dwell in large colonies on the muddy sea floor of the Bay. I have seen them in large numbers on the northern part of Macleay Island and on North Stradbroke Island. The present day fishermen use them for bait. It is interesting to note that Mytilidae shells are found in large quantities in the lower layer of "kitchen remnants" on Site No. 1 BRISB. They are rare in the upper layer where Arcidae and Ostreidae shells take their place.

There are two cultural layers on Site No. 1 BRISB., which are divided by an almost sterile layer of black soil. This means that (where I looked) the site was inhabited at two different periods. The first inhabitants must have found a large colony of Mytilidae and exhausted it. At times they must have gone to the cliffs and gathered oysters as well. When the Mytilidae molluscs were exhausted, the Ostreidae took over and in the muddy bottom - the Arcidae. So the second lot of inhabitants on the site found hardly any Mytilidae for food. Now Mytilidae are again to be found near the site, possibly because the oysters were later exhausted. These, of course, are only suppositions. I believe that observations made in excavations in 1962 and 1964 (not yet published) will confirm or deny this hypothesis.

But on the contrary, on Site No. 68 BEEN. (Macleay Island), Mytilidae shells are to be found in large numbers in the upper horizontal level of the cultural layer. Ostreidae are the main shells in the lower level. So possibly here, there was a reverse process in the growing and eating of the molluscs. The fact is that Lucas Passage, near Site No. 68 BEEN. became shallow and swampy and it would follow that the seabottom would not have been suitable for Ostreidae. But it must be kept in mind that Site No. 68 is badly damaged by a fruit plantation and the cultural layer, where I made my trial pit, could have been ploughed up. Only excavations would give an exact setting out of the layers and following this, one could make more exact hypotheses of reasons for the different content of shells in the cultural layers.

Of the other shells found on the sites, only the Turbinidae and Thaisidae families need be mentioned.

Two species of the large Turbinidae could have been used as a source of food; but they are to be found in the Cape Moreton area only (Sites No. 6, 8 and 40 RED.). It would seem that they are not to be found in the other places looked at by me. Huge quantities of the operculum of the Turbinidae shell - the so-called "cat's eyes" can be collected on these sites. Their large numbers suggest that they were collected for some reason (possibly as decorations ?).

I will not dwell on shells of the Thaisidae family. They are found on many Ocean sites of the 3 main islands - but not in large numbers. Only Site No. 40 RED. (Moreton Island) has them in any quantity and the neighbouring sites No. 6 and No. 8 have quite a few.

* * *

Mesodesmatidae, found on several Peel Island sites, are so small, that large numbers would have to be collected to have been the daily diet of a family. Hence they may have been collected for the sake of the shells which could have been used as ornaments.

I will mention also that on several sites (e.g. No. 43 BEEN etc.) single examples of the large Nautilidae shells (Nautilus pompilius) were found. The shells of these molluscs are found so rarely that it is obvious they played no role as a food source for the inhabitants of these sites. These shells, when placed in a certain position facing the wind, emit a trumpet-like sound, which could have given them some magical significance for the people.

* * *

It was sometimes noted that the inhabitants used to place the shells in groups for some reason. I have already mentioned one such heap of Potamididae shells on Site No. 1 TAMB. on South Stradbroke.

Two trial pits, 30 yards apart, were made on Site No. 73 BEEN. in the southern part of North Stradbroke Island. When a count of the shells was made, it was found that there were 42 Donacidae (shells from the Ocean shore), 2 Arcidae and 1 Potamididae (shells from the Bay side) in the first pit. In the second pit, the reverse was the case - 22 Arcidae, 17 Potamididae and 4 Ostreidae (from the Bay side) and only 2 Donacidae.

In 1962, I made vertical cuttings to sketch the cultural layers in some sites near Lota (not listed). I was fortunate enough to come across a section of the layer, where to the east of a certain point were exclusively Potamididae shells and to the west only Arcidae.

* * *

Observations of the dispositions of the various shells in the layers, sometimes led to unexpected conclusions.

On 14th July 1963 I made two trial pits in Site No. 11 BEEN., near TAZI constructions in the Herring Lagoon area on North Stradbroke Island (on the bank of a large swamp not far from the Ocean).

The first trial pit gave nothing of note - only a 4-inch layer of Donacidae shells from the Ocean beach. The second trial pit showing 5 layers, was of more interest. They were the following -

fifth layer - the top level of shells - Donacidae in 6 inches of black soil
fourth layer - Donacidae in grey soil - 2 inches thick
third layer - a seam of sterile grey sand - 2 to 3 inches thick
second layer - a layer of Arcidae and Potamididae shells - 2 inches thick
first layer - light brown sand.

What first surprised me was that the bottom layer consisted of shells which usually grow in the less salty waters of the Bay, where there is a muddy bottom. My first thought was that they were brought over from the immer shores of the Bay. Then another idea occurred to me.

The so-called "18-mile Swamp", on the banks of which is Site No. 11, stretches from the north to the south dividing the main part of North Stradbroke from the sandy Ocean beach. It is about 1-2 miles wide and ends in Swan Bay in the south. This cove was probably much larger once, taking up the whole area of the swamp and going as far as Herring Lagoon. After some time, the line of sand dunes moved further south and the northern section of the present cove began to fill in, bog up and finally turn into a swamp.

In this way, the first inhabitants of Site No. 11 could have lived at a time when the cove went as far as Herring Lagoon, and they ate its shellfish (Arcidae). The second lot of inhabitants lived there at a time when the cove near Herring Lagoon had turned into a swamp. Salt water molluscs no longer existed there. The inhabitants would have had to cross the swamp* to the Ocean shore to collect Ocean molluscs (Donacidae).

This is to some extent supported by the fact that when I investigated the shore of the southern region of North Stradbroke Island, I found that it consisted of a beach of low recent dunes. The last site on the Ocean shore is No. 41 BEEN. (map ref. 658.665), then for more than 6 miles, there are no signs of any dwelling sites.

* * *

There were very few remnants of animal and fish bones in the places I investigated. Odd animal bones do occur on the tops of some sites, but they may have come from recently dead animals. Skeletons of cows, horses and pigs can be found all over the island. There are a few small heaps of bones near Site No. 9 RED. but with them were rusty tins. This was once an old army position?

Because of this, it was risky to collect bones from the top of sites. I did collect some bones which were shattered as if to obtain their marrow (not usually done by Europeans). These were mainly bones from wallabies, which are still there in large numbers.

But what is really surprising is the lack of fish bones on the island sites. On top of the sands, they could have disappeared with the passage of time. But they are hardly ever found even in the uncovered cultural layers where I have found at most only 10 fish bones. Here they should not have disappeared so quickly.

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* I have been told that even now, there are places shallow enough in this region for a person to be able to get through to the Ocean shore.

When excavating several sites in Manchuria, I used to cut through cultural layers which consisted solely of fish bones and all of these bones were easily distinguishable. So if they existed, they should have been preserved in the good conditions found on the sites of the inner shores of Moreton Bay. From this, one concludes that the dwellers on these shores were not fishermen or were poor fishermen and ate fish very rarely.

On Site No. 41 BRISB. (North Stradbroke Island), I found some badly preserved bones which were almost certainly those of a whale. Bone fragments of a large animal, possibly those of a whale, were also found on Site No. 33 BEEN. (North Stradbroke Island). But because these were only single chance findings, one can say that the whale was obtained accidentally either being thrown up dead or half dead on the beach. Although the distance between there two sites is more than 6 miles, it is still possible to suppose that these bones were all from the same whale and were shared among the different family groups on the sites.

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VIII. Human Skull Found on the Ocean Shore of Moreton Island

On 1st December 1964, while investigating Site No. 1(b) RED., I found fragments of a human skull on the slope of a dune a little to the north of the site. Digging the sand around the place where I first found these fragments, I found more, including part of the mandible. On 15th December, I explored this place again and found some more fragments and several single teeth.

Although much of the skull is missing, I was still able to reassemble part of it - mainly the right hand side. The mandible was also reassembled in part and formed two isolated sections of the right jaw. The left hand part of the skull has evidently been worn away by sand and winds; although of course the possibility of finding the rest of the fragments does exist (Plate VI, Figs. 1 and 2).

From the fact that the mandible was found with the skull, one can surmise that the grave was somewhere nearby. The head evidently rolled down the slope of the dune, together with a mass of earth. Otherwise the light and curved mandible would have been left behind. This also explains the fragmented condition of the skull. If this is so, the "buried" (or abandoned) body should have been somewhere in the top part of the dune. But at the present time, the old dune is being covered anew by sands, mainly from the influence of S.E. winds. The bones, if they are still preserved, must then still be deep below the sands. For this reason, I dug 12 smallish trenches across the slopes of the dune. I did not find anything.

The bone of the skull is weatherbeaten and crumbles easily at the slightest touch (except for the temporal bone which is quite well preserved). It is regrettable that the super-orbital ridge of the frontal lobe (os frontalis) and the glabella region have been lost because of weathering - as these are necessary for various measurements.

The skull belongs to the Homo sapiens group, but has very primitive characteristics. Because of the damaged glabella region and the lack of the left part of the skull, it was difficult to take exact measurements. When determining the length of the skull, for example, it was necessary to provisionally add $\frac{1}{2}$ cm, which is not very much for an Aboriginal skull, which has highly developed arcus superciliares. The cranial index measurement is only approximate and was arrived at by measuring half the width of the skull and multiplying it by two.

All the same, I present these approximate measurements.

Length of skull - along the line of glabella-opisthocranion..... 180 mm.

" " " - along the line of the glabella-inion..... 175 mm.

Width of skull ..... 126-128 mm.

Height of skull - from the line of the glabella-opisthocranion ..... 76 mm.

" " " - from the line of the glabella-inion ..... 94 mm.

Length-height Index - from the glabella-opisthocranion line ..... 42.2 [redacted].

" " " - from the glabella-inion line ..... 53.7 [redacted].

Cranial Index - ..... 70-71 [redacted].

Thus it is clear, that in spite of some inexactitude in the measurements, the skull is quite dolichocephalic and very low. From the height of the cranial vault, the Moreton Island skull is close to the lowest measurements for Homo sapiens. It must be remembered that the glabella region and the arcus superciliares are damaged and thus the skull could be even longer than I have suggested (Plate V, Fig. 1).

The two separate parts of the right side of the mandible are also of interest. The corpus mandibulae is preserved along the tooth line, from the canine to the empty alveole of the third molar; and further back remains part of the ramus mandibulae, forming an angle of 60^{o} to the tooth line. The front part of the mandible, including the chin, is, unfortunately, missing.

The teeth preserved are: C, PM_1 (broken), PM_2, M_1, M_2 (the alveole for M_3 is empty).*

Length of preserved row of teeth (C-M_2) = 43 mm.

Length of preserved row of teeth including empty alveole M_3 = 55 mm.

Molars only (including the empty alveole)=35 mm.

The teeth are badly worn; M_2 is 12 mm. long and 11 mm. wide (at its largest parts); but was originally larger

The corpus mandibulae is very high. The measurement obtained along a line down between M_2 and M_3 (alveole) is 28 mm. And between M_1 and M_2 it reaches 30 mm. Upon taking corresponding measurements of two other Aboriginal skulls, I found that on these the first measurement was 23 mm., 24 mm., 24 mm. respectively; and that the second measurement was 26 mm., 27 mm., 27 mm. respectively.

The foramen mentale seems to be moved back and is found on the line between PM_2 and M_1. Whereas its usual position is said to be on the line between PM_1 and PM_2.

Concerning the second fragment of this mandible, the upper part of the ramus mandibulae, I noted that the processus cornoideus does not incline sharply upwards and consequently the incisura mandibulae is not very large (Plate VI, Fig. 2).

It is difficult to speak of the age of this skull. The poor preservation of the bone is more from the conditions of its most recent location (sand and exposure to weather). But all the same the skull gives the impression of being very old. Analysis of the bone has not been done.

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* I picked up several odd teeth where the skull was found. But since most of them were damaged, I put them aside. The canine was also loose, but it fitted properly into the socket.

PART II

Stone and Other Implements from the Islands and the Mainland in the Southern Region of Moreton Bay and from Moreton Island

Introduction

I have divided all of the implements I found into 10 groups in accordance with their work purposes or designations, e.g.

1. Chopping implements or mainly for chopping
2. Cutting implements
3. Stabbing and jabbing implements
4. Scraping implements or mainly scrapers
5. Chiselling, drilling and sawing implements
6. Crushing and breaking implements
7. Grindstones and anvils
8. Semi-implements
9. Nuclei
10. Various implements and objects.

Any classification, no matter which we keep to will be our classification. A person of primordial reason interested himself only in whether the given implement at hand was suitable for his work at that moment, e.g. could he use it for cutting, if he had to cut something. In this case, any implement or even a flake of stone, coming to hand and having a sharp edge would have satisfied his immediate need.

In his spare time, he did in fact make more specialized implements. But on inspecting the stone implements found on Moreton Island, it is at times quite clear that several were made in haste and were just barely suitable for the task on hand, because he did not have a properly made implement with him. He would take the first likely looking stone or pebble, roughly shape it with a few blows and use it. Sometimes it was abandoned as soon as the particular work was finished, which would explain why such implements are found more frequently on the sites than those which have been well made.

Although it is sometimes difficult to classify such an implement its purpose can usually be defined without difficulty. They were either for cutting or chopping or scraping and so on.

Difficulties will occur, as they do in all classifications, when the implements were clearly used for two different purposes. This could have been so that they need not carry too many tools with them - or possibly so that they would not have to search through all of their implements to find the necessary one for some specific job. Thus the

Aborigine would make one edge of the stone flake into, let us say, a saw and another part into a cutting or a scraping edge (e.g. implements No. 452 and No. 453 from shores of Coombabah Lake).

In such cases, one has to classify either by some more or less interesting factor in it, or by the best-made part of the implement. For it is clear, that since one part of the implement has had more attention paid to it, this would be the part more needed for their work. Though of course, when describing such an implement, its other purpose must also be mentioned.

In all 10 groups, there will of course be implements which do not differ greatly from each other. Because of this I have divided them into sub-groups. Thus in the first group (chopping implements) there will be: axes; polished axes; choppers of various kinds; and knife-like hand-axes. Even in these sub-groups, of course, the implements can differ from one another.

Before beginning a description of the stone implements collected in the Moreton Bay area, I would like to make some general comments about them.

I had the opportunity to work archaeologically in the Far East (Asia) for many years; and some groups of stone implements from the Stone Age found there are very similar to several of those found in the Moreton Bay area. Some of the implements found here, for example, appear to be typical of the Paleolithic culture of Siberia or of the Mesolithic culture of Manchuria. Similar implements were found by P. Teilhard-de-Chardin in Chinese Turkestan. Because of this, I have tried to keep my classification as far as possible to that current in Europe and America.

The large size of many of the implements is quite noticeable. Typical "microliths", such as I used to find in Manchuria, in the eastern gorges of Ku Sian Tun, or in Eastern Mongolia,* and such as the ones depicted on p. 41 in The stone implements of Australia by F.D. McCarthy (Sydney, Australian Museum Memoir No. 9, 1946),** are practically non-existent.

A certain percentage of small implements (piercers, drills, chisels, and others) can not truly be called "microliths". Such implements are found on Neolithic sites all over the world. There are a lot of worked chips and flakes of stone on the sites which would

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* Now in Harbin Museum (China).

** Similar drawing appears in S.R. Mitchell's Stone-age craftsmen; stone tools and camping place of the Australian aborigines (Melbourne: Tait Book Co., 1949).

come into the category of waste flakes when an implement was being made. But there is no real evidence to confirm that they could have been used as implements. Because of this, I have not made a special group of small implements, but only call the reader's attention to their size.

The percentage of small implements does however seem to be greater on mainland sites than on island sites. And there seem to be hardly any implements of the "Lame" or "true blade" type, which are widely found in the rest of the world. In fact, I found only one implement of this type and two or three which could be said to be similar to a ("Lame") blade implement. But their shape could have occurred by chance.

Polished (or semi-polished) axes do exist in the southern region of Moreton Bay. There were many on the mainland. But on Moreton Island, among a very large number of stone implements collected, not a single polished axe or part thereof was found, although knapping and polishing was known to the dwellers on this island. For instance, we have a massive stone knife (No. 761) from Site No. 33 RED. with one side of the blade very well polished.

With regard to the technique of preparing or making the implements, the following can be said:

1. The majority of implements are made by splitting or chipping flakes from a nucleus, or by simple knapping of a stone on one or several sides. Large stones were first broken or split into smaller pieces and then were either worked directly into an implement or else were used as nuclei, and had pieces flaked off them. Pebbles were often directly worked into implements.

   I did not find any trace of stones being heated by fire to make the splitting easier. Several of the implements did have the appearance of having been in contact with fire, but they probably could have fallen into a fire accidentally, after they had been made. On Sites No. 6 RED. (Moreton Island) and No. 36 BRISB. (North Stradbroke Island) there were stones which looked as if they had fallen to pieces. It is possible that they were heated, but the reason why, is not evident. There was no sign that the pieces of these stones were used by anyone.

2. Primary working of a future implement was often done while the piece of flake was still attached to the nucleus stone. Then the flake was knocked off by a hard blow, giving a resultant uni-facial implement. The final working of the implement (and retouch of its

edges) in the main is crude and was mainly done by percussion. Some of this knapping was done while the implement lay on a type of anvil stone (the crude knapping). The finer retouching was done with the implement held in the hand.

Retouch by pressure flaking was noted here and there and was obviously known to the inhabitants. But implements worked by this particular method are few. Pressure flaking was mainly used to retouch edges of implements. The use of pressure flaking to obtain long flakes, as did the inhabitants of ancient Europe, Asia and America, is not found in this area. The nuclei here are simply pieces of stone which bear traces of having had flakes chipped off them but no scars of pressure flaking.

As I have already mentioned, there were almost twice as many implements found on the 72 Moreton Island sites as there were on the 209 other sites on the rest of the islands and the shore of the mainland.

From information obtained at the Queensland Museum about my areas of investigation, I learned that during the first years of European settlement in this area, the following isolated groups of Aborigines were noted:

Moreton Island	Wogee Group
North Stradbroke Island	Noonukul "
South Stradbroke Island	Goenpul "
North of Logan River	Turubul "
South of Logan River	Chepara "

So we see that Moreton Island was inhabited by an isolated tribal group even in fairly recent times. So the several cultural features peculiar to the Moreton Island sites are not surprising. Unfortunately I have no information about the relationship between these groups, either by blood or linguistically. But in ancient times these groups may have differed from each other even more than noted above.

* * *

The following description of stone implements found on sites in the Moreton Bay area is only preliminary. I have not had the opportunity to study my collection in detail, since most time has been given to writing up the report of my survey. Because of this, many implements remain undescribed and others are written up with insufficient detail.

* * *

I. Chopping Implements

In this group, I am classing all chopping implements (sometimes with only one edge of the blade worked), which could make a deep gash with one blow or chop an object in two with several blows.

Usually stone chopping implements do not cut as do present-day metallic axes - but tear jaggedly or smash and tear the object along a certain line, eventually breaking through it. Because of this, when used in battle or hunting animals - where usually only one blow could be struck - these implements not only struck to wound but also broke (e.g. skulls, bones etc.).

With this in mind, I considered it allowable to conditionally include in this group, two small stone "celt-like" axes (Nos. 260 and 299) with sharpened edges. Their purpose would not have been to do domestic chopping, but to smash, break or wound in hunting or fighting.

In all, there are 44 implements of this group in my collection. This does not include an incomplete axe head, prepared for polishing, but with an area of only 1 cm. polished. This axe is registered in the Anthropology Museum lists as No. 8345 and was donated by Mr. R. Brown of Russell Island.(*)

I have divided the chopping implements into 6 sub-groups.

	Various Axes	Polished Axes	Unfinished Axes	Various Choppers	"Celts"	Knife-like Hand-axes
Moreton	3	-	2	3	-	15
North Stradbroke (Ocean side)	-	1	-	1	2	10
South Stradbroke (Bay side)	-	-	-	-	-	1
Inner Islands	-	-	*	-	-	1
Mainland	1	3	-	1	-	-
Total	4	4	2(*)	5	2	27

Various Axes

There are only 4 implements in this sub-group. These are flakes, split or chipped off a nucleus, and blocks. They are worked so that their knapped edges would leave a torn gash upon striking an object. They could have been attached to an axe handle with the aid of pitch or may simply have been held in the hand. As there are not many of them, I will list them all. It is possible that amongst the implements collected are parts of the two-piece "kodja" axe described in a recent publication by V. Kabo "Stone implements of Australia" in M.A.E. collection, 1963.

No. 802. This is a rough flake, 13.5 cm. long and 7.7 cm. wide. The margins are retouched all round. It has an elongated oval shape (length-breadth plane) and is almost triangular in cross-section (asymmetric). The bulbar face is almost flat. The butt end is noticeably thicker (4 cm. in cross-section). Work on the axe was begun while the flake was still part of the nucleus, and then completed when the flake had been struck. In this case the end of the flake curved outwards forming one side of the cutting edge without any further need of retouch, and the centre of gravity falls in the middle of the blade (Plate X, Fig. 1). This axe was made of Rhyolite, almost certainly obtained from Cape Moreton. It was found close to a site near the middle part of the Ocean side of Moreton Island (Special Place No. 7). The fairly sharp, long margins of the flake could have been used for cutting.

No. 1006. Also found on Moreton Island Site No. 9 RED. and made of Rhyolite, this is a different type of axe. It is a piece of stone knapped on all sides by rough blows. The resultant massive implement, 10 cm. long, 6-7 cm. wide and 4-7 cm. thick, has one chopping edge and another which is blunt. If we presume that it was wedged into a split handle, as was usual in Australia, it could have served as a "kodja axe". The cutting edge is very crudely knapped on both faces. It differs from axe No. 802 in that it is much thicker and is worked differently. In S.R. Mitchell's Stone age craftsmen, a similar axe is called a bi-face block axe (Plate X, Fig. 2).

No. 891. This is a fragment, also knapped on both sides, but thinner than the type described above. It is made of a flattish piece of silicified Sandstone about 2 cm. thick. This axe had seen much use as the edges were well worn. Found in southern part of Moreton Island, Site No. 48 RED.

No. 473. This is a small axe of Quartzite, very asymmetrical in cross-section. It was found on Site No. 54 TAMB. near the mouth of the Logan River (Mr. Smith's farm). It is 7.4 cm. long, 6 cm. wide and 3.5 cm. thick at the butt. One side is flat, indicating that work was done on the implement before it was split from the nucleus. Its asymmetrical cross-section and its small size

suggest that it was not attached lengthwise to a handle, but across the transverse plane as one does an adze (Plate X, Fig. 3).

* * *

Polished Axes

Such axes were found in large numbers in the area I investigated. Besides four which are included in the list, there are two others in the Anthropology Museum of the University of Queensland. I have also seen them in many homes of local inhabitants of North Stradbroke, Macleay and Russell Islands and on the mainland. All of them are in the shape of a flattened piece of stone - most often a large, flattish pebble, which in the first stages of working was knapped on all sides by crude blows. They were knapped because the cortex of a pebble does not lend itself to polishing. The butt end of the pebble was usually left unpolished, making it easier to secure to a handle (would not slip). Axes in this region usually had polished edges, the polishing rarely going beyond the middle of the implement. These axes were ground on both faces and are more or less symmetrical in cross section. Viewed from the side the contour of the edge is curved; except for axe No. 1077 whose edge is sharply angled on one side (oblique).

All four axes, it seems, were wedged into a handle in the usual manner (handle split at one end, gripping the axe head). The axe from the Dunwich area (old collection) was probably attached by inserting the butt into a hole in a solid haft. Such a handle would have been needed for an unfinished axe found on Moreton Island, of which more will be said later.

The majority of axes collected here bear a marked resemblance to similar types found in parts of Europe and Asia. The purpose of the latter was to chop, and especially to split lengths of tree trunks or limbs into irregular boards for all purposes.

Axe No. 138. This implement is made of a pebble of basaltic rock, 14.5 cm. long, 9.3 cm. wide and 4.5 cm. thick. Traces of the original cortex remain in parts of its surface. The pebble was worked in three stages:

(1) It was first roughly flaked over most of its surface, especially along the margins, and given a chopping edge.

(2) It was then ground into its final shape and

(3) the edge was given a smooth polish.

The scratches left by the grinding are quite fine and parallel, indicating the use of some granular material, probably sand. The axe had seen a lot of use, as the edge had had pieces chipped out of it, from striking blows. But these lesions are fairly smoothed over indicating that the axe was still used after it had been scarred. It was found on Site No. 28 BEEN., North Stradbroke, in the Herring Lagoon area (Plate VII, Fig. 2).

Axe No. 483. This is smaller than the one just described. Viewed from the side, it is roughly oval in shape; 12.5 cm. long, 9.5 cm. wide and up to 4 cm. thick. It was almost certainly a flattish pebble of Quartzite, but no trace of the outer cortex remains as the implement is completely worked on all sides. The edge is polished, but possibly not quite completed as there are spots on both faces which are only partially polished. For all that, the axe had been used as is indicated by the dents in the cutting edge. It was found at Cabbage Tree Point near the mouth of the Logan River and given to me by Mr. L.P. Ebdon (Plate VII, Fig. 5).

No. 484. This is a small flattish axe (piece of Quartzite), almost egg-shaped. It gives the impression of having been made from a piece of stone, not from a pebble. It is 11.5 cm. long, 7.8 cm. wide and 3.5 cm. thick (Plate VII, Fig. 3). The sides bear scratches from crude almost jagged primary working. Almost half of one face is polished (from the edge upwards). This polishing must have been done by some special sharpening stone or method which made certain curved indentations, also polished, in the face of the axe. Found on Site No. 89 BEEN., it was given to me by Mr. E. Rose.

No. 1077. This axe was found on the property of Casey Bros., Hope Island in the mouth of the Coomera River and was given to me by the owners. This is a flat elongated piece of gneissose rock (not a pebble) 15.5 cm. long; up to 8.8 cm. wide and up to 3.3 cm. thick. It was first crudely flaked, on both sides, then its lower part was polished on both faces to make an even edge. The method of polishing is not clear, but it was probably done on a grindstone. It differs from the other axes in that the polished edge does not run at a right angle to the long axis, but diagonally to it (Plate VII, Fig. 1), so that one margin of the axe is almost 2 cm. longer than the other. It was inserted into a split axe handle which gripped the body of the axe head by the middle, almost certainly with the longer pointed part of the edge to the fore.

For comparison, I will now say a few words about an axe (No. 7577) from the old collection of the Anthropological Museum, University of Queensland. Although it also comes from the Moreton Bay area, it differs somewhat from the ones described above. According to the records it was found by Mr. Dickson of Dunwich, on North Stradbroke Island, exact location unknown. It differs from the axes already described, firstly by its unusual width - 14.5 cm. wide and 17 cm. long, and secondly, its butt end has a visibly narrowed

neck as if for insertion into a thick wooden handle. In any case this axe could not have been slipped into a split axe handle as was usual. If a lump of pitch had been attached to the top part, it could have been used as a hand axe.

Roughouts (or Axe-blanks) for Stone Axes. As has already been said, a piece of stone intended as a future axe was crudely knapped to a shape approximately that of an axe, before grinding. Pebbles were also knapped in spite of the fact that they might already have had a suitable shape, because the original cortex of the pebble is usually very difficult to grind. On the other hand the irregular surface, after knapping, is more suitable for grinding into a desired shape. The butt end of the axe, as was mentioned earlier, was usually left unpolished to ensure a better grip with an axe handle. In my collection there are several such axe blanks.

No. 796. Found on Site No. 6 RED. on Moreton Island. This is a piece of Quartzite (not a pebble), crudely knapped on both faces. It is 13 cm. long, 8.5 cm. wide and up to 5.7 cm. thick. One face has been worked fairly flat, but the working on the other face is not completed. There are no traces of either grinding or polishing. The butt end has a narrowed neck as if for insertion into an axe handle (Plate VII, Fig. 4). In this respect it is similar to axe No. 7577 from Dunwich, described earlier. It is difficult to judge what shape the axe would have been when completed, but the roughout already has a somewhat curved outline.

A similar type of "roughout" for an axe was found by Mr. R. Brown at Canaipa Point (Site No. 55(c) BEEN.). But on this implement the preliminary work is completed, and a small section is already visibly polished. Thus, in this case we can see that, at times, polishing was begun immediately after knapping the implement into its preliminary shape (registered in records at Anthropological Museum (No. 8345)).

No. 919 is part of a stone axe found on Moreton Island. This is not of great interest since only a small part exists. There seem to be signs of a more recent retouch along the blade. One gets the impression that after this piece broke from the original "roughout" it was used as a "massive stone knife", a fairly common type of implement of which I will speak later.

It may well be that quantities of split stones and large pebbles found on the sites were also "roughouts". But these cannot be listed as implements because their designations are not clear.

* * *

Various Choppers

This sub-group contains several worked implements of the chopper type, whose designation for use is not clear, or implements which cannot definitely be called axes. Since some of them are simply pieces of stone and can only just be called implements, I will mention only a few examples.

No. 890. This implement is well worked on one face and could have been called an axe if not for its small and too-rounded shape (made of Andesite (?)). Found on Site No. 48 RED, Moreton Island, it is 8.7 cm. long, 7.8 cm. wide and up to 3.6 cm. thick. Since its faces are very domed, it would have been difficult to secure into a divided axe handle. On the other hand its butt end is not suitable for insertion into a thick axe handle. Besides this, if it had been inserted into a handle, only a negligible portion of the head would have protruded. More than likely this was a type of hand axe, held directly in the hand, possibly with a padding of pitch as a cushion on the butt end. It is crudely knapped from all directions (Plate XI, Fig. 1).

No. 766. Found on Site No. 73 BRISB., this is simply a piece of Quartz, split from a large pebble. As with all pieces split from a nucleus, it has one flat face. The other side still retains the original cortex. A section along the long axis shows a thick "butt end" and a thin "tip". The "tip" has been worked by light percussion blows. It is 8.3 cm. "long", 7.5 cm. wide and up to 4.3 cm. thick. It would not have been suitable for attaching to any sort of axe handle, which is why one can presume that it was either a hand axe or a large scraper (axe-scraper (?)).

No. 853. Found on Site No. 50 RED. (Moreton Island), this is a piece from a pebble of Rhyolite. When struck from the nucleus, the end of the flake formed a kind of edge. This implement was originally larger, but had broken and only this part remains. The edge has been retouched, possibly by pressure flaking. The margins of the butt end have also been worked, most probably to make it more comfortable to hold in the hand. The butt end is thick and heavy, the implement being 10.2 cm. wide here, 5.2 cm. thick and 10 cm. long. This implement was probably a hand axe; but the possibility that the part broken off may have been elongated, must not be excluded. If this was so it would have belonged to the category of "knife-like-hand-axes".

* * *

Two small, so-called "celts" are included in this group in order not to make a special sub-group for them. As well as differing from the above mentioned axes, they differ from each other. Their purpose was not to chop, but rather to gouge or break through something. Since their "top" section is quite thick, it can be surmised that they were secured to the handle transversally, rather than inserted into a split end.

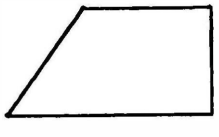
No. 260. Found on Site No. 43 BEEN. (North Stradbroke), this is a beak-like pointed implement made of Quartzite and has the appearance of a smallish pick. In cross-section, the pointed end is triangular, while the rather thick butt end is almost square. The pointed end is somewhat curved. It is 8.2 cm. long, 5 cm. wide (at butt end) and up to 4 cm. in cross-section. (If I am correct in saying that it was attached to a handle transversally, then it could have been used either as an adze or a small pick.) The flaking is crude and probably carried out with a hammer stone; implement almost certainly held in the hand (Plate XI, Fig. 2).

No. 299. This is a "celt" of another type. It too is an elongated piece of Quartzite. But its working end was fashioned to be wide, coming to a point at the end. Here too the flaking is crude, done by blows from a hammer stone. In size it is 7.6 cm. long, 5.3 cm. at its widest part and up to 3.7 cm. thick. There was no retouch apart from deliberately made indentations on either side, most probably for attaching it to an axe handle. (Most probably its purpose was that of the other "celt", but it could also have been used as an axe-chisel for hacking at large limbs and trees.) Found on Site No. 58 BEEN., North Stradbroke. (Plate XI, Fig. 3).

* * *

Knife-like Hand-axes

This is a special kind of implement frequently found in the regions I investigated. Its most characteristic features are to be found also in some cutting implements and some scrapers. These implements were clearly meant to be gripped in one hand, with the fore-finger extended (in this way the best pressure is obtained on the implement). It sits firmly in the hand and gives true blows and cuts truly. The implement is usually trapezoidal in shape (see Text, Fig. 2).



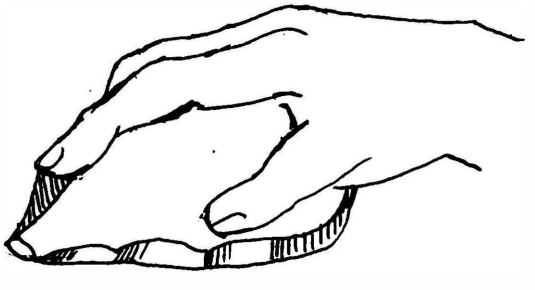


Fig. 2.

Such implements are also met with in the Old World. To my knowledge similar implements are to be found in the later Paleolithic culture in Siberia. I found a similar implement, among others, of the Mesolithic Age (near Harbin, China) and P. Teilhard-de-Chardin found similar types of implements in Chinese Turkestan. They are even found in Alaska. In cross-section many of them are triangular, but they can also be flat and worked on two sides. The butt is quite thick and does not cut into the palm, and the bottom "cutting" section does the necessary work. Some of these implements look as if they were made in haste, when a sudden need for them arose, and then later abandoned upon completion of the task.

Implements of this type were found mainly on North Stradbroke and Moreton Islands. In all, I collected 27 knife-like hand-axes. They seem to divide into three groups:

(1) Crude, hastily-made implements - 4 examples
(2) Triangular in cross-section - 10 "
(3) Bifacial - 11 "

Two such implements do not fit into any of the above mentioned groups.

(1) Crude, Hastily-made Implements

Of the four implements found, three are from Moreton Island and one is from North Stradbroke. Two of them are only fragments of the former implements.

No. 229 is a typical example. Found on North Stradbroke, Site No. 63 BRISB., it is a piece struck from a large pebble of Quartzite with the original cortex still on one face. The implement did not need much shaping, except for the butt end, and the sharp margin opposite the edge which was ground so it would not cut into the hand of the holder. One face of the cutting edge is retouched with heavy blows. The implement had been much used, as the cutting edge is quite worn. It is 13 cm. long, 7.8 cm. wide and 4.5 cm. thick. In cross-section it is triangular (Plate XII, Fig. 2).

No. 669. Similar to No. 229, but more crudely made, this implement is part of a pebble of Quartzite. The "back" was formed by one blow, the cutting edge only being retouched by simple blows. It was found on Moreton Island, Site No. 6 RED., 12 cm. long, 8.7 cm. wide and 4-5 cm. thick, being thickest through the central part.

No. 676 and No. 846 are fragments of implements of the abovementioned types. They are flattish and rather thin in cross-section. But since the original cortex remains, the flattish shape is accidental. No. 676 is fully retouched along the cutting edge and back. On implement No. 846 the cutting edge only has been worked.

Both implements were found on Moreton Island; No. 676 on Site No. 20 RED., and No 846 on Site No. 47 RED.

(2) Triangular in Cross-Section

These implements are similar to the first type but are usually smaller in size. The implement is shaped to fit into the hand, and the retouch is rather fine. They are not unlike the massive stone knives (which will be described in Group IV - cutting implements) and differ from them mainly in having a blunter edge, which is not suitable for cutting.

No. 180. This is a typical example found on North Stradbroke, Site No. 23 BEEN. It is made of a piece of Jasper, which is black with white veins. The sloping "back" along which the index finger rested retains its original cortex. The butt end was shaped to slope downwards by a series of blows. Good bifacial retouch produced a sharp edge, and one face is fully retouched (by percussion method). From the appearance of the implement it had seen a lot of use. In size 11 cm. long, 6.7 cm. wide, to 4.5 cm. thick (Plate XII, Fig. 1).

No. 75. This implement is similar to No. 180 above, but the "back" has been formed by several blows, so it can be seen that the slope for the forefinger was deliberately made by the craftsman. Retouch on the cutting edge is quite fine, most probably done by light blows with a hammer axe while the implement was held in the hand. The retouch of the "back" is cruder. The implement had been much used and the cutting edge blunted. Its size is 10 cm. long, 5.7 cm. "high" and 4.5 cm. thick. It is not markedly triangular in cross-section but the rear end is quite thick. It is made of Dolerite, found on Site No. 49 BRISB., North Stradbroke Island.

No. 1074. A good example of this type, from Site No. 70 BRISB., was found and given to me by Mr. John Clegg. The working is fine and it can be seen that the slope towards the tip has been deliberately produced so that the implement can be easily gripped in the hand. Although the "back" has been retouched, it retains a sharp ridge which may have been used for cutting, while the opposite edge was more suitable for chopping. The retouch is rather crude. This implement was made of Quartzite and is 12 cm. long, up to 7.5 cm. broad and up to 6.3 cm. thick (Plate XII, Fig. 3).

No. 175. Found on North Stradbroke Island, Site No 28(a). BEEN., this is similar in shape to the knife-like hand-axe but smaller in size. The "back" was worked in the usual way with a deliberate slope downwards, but the cutting edge was hardly worked at all. This may have been an unfinished implement, but it can be seen that the blade had been used. It is made of Quartzite.

No. 835. Found on Moreton Island, Site No. 42 RED., this implement is very crudely made, and the whole shape was attained by about 5 or 6 blows. The cutting edge is only slightly worked. It has the appearance of being hastily made for some purpose needed then and there. It is made of Jasper.

(3) Bifacial

The next type of knife-like hand-axes are those which are worked on both faces. They are not always triangular in cross-section, but are frequently polygonal or even rectangular. The general trapezoidal shape of the implements is still retained. More or less typical examples are No. 780 and No. 624.

No. 780. Found on Site No. 6(b) RED. near the northern tip of Moreton Island, this implement is made of Quartzite, a good, solid, glass-like type of rock. It is crudely worked, both on the cutting edges and along the "back". Some of the knapping was almost certainly done while the implement was held in the hand (probably by the side of a hammer axe). The "back", as is usual, is quite thick. The cutting edge is so sharp, that if it were straighter, it could have been used for cutting and would then have belonged to the category of knives. But because of the crude workmanship, the blade is jagged and could only chop or tear. This is probably an unfinished implement, since a flake (labelled No. 785) fits exactly into one of the flake scars on the implement. Thus we may presume that the implement was made where it was found (Plate XIII, Figs. 1 and 2).

No. 624. This is a shorter rather squat type of implement. Although better worked than No. 780, there are traces of crude blows by a heavy hammer stone. The blows were mainly directed on the butt end of the implement where there was a suitable striking-platform. The cutting edge is well shaped and the fore part was deliberately sloped. Made of Quartzite it is 7.8 cm. long; up to 8 cm. wide, and 6.2 cm. thick. Found on Site No. 4 RED. on Moreton Island.

No. 168. Similar in shape (squat) to No. 624, except that there is no clearly shaped forepart, this implement was found on Site No. 16 BEEN, North Stradbroke Island. The cutting edge is well retouched by a fine, probably pressure, technique. Because there are two examples of this shortened, squat, type, one can presume that this is not a chance implement. Since the sloped forepart is not clearly defined, this implement could have served as a scraper, but the cutting edge is too blunt. It was made of Quartz Porphyry, and in size is 8 cm. long, 6.7 cm. "high" and 4.5 cm. thick.

No. 242. This implement is very like the above types, but since it is made of rather soft rock (Quartzite?), the edges are rather smooth and rounded. The cutting edge is worn from use. The butt end has a ridge which is almost a second cutting edge. Found on Site No. 37 BEEN., North Stradbroke Island. It is 10.3 cm. long,

7.2 cm. wide and 5.8 cm. thick.

No. 690. Found on Site No. 25 RED. on Moreton Island. This implement is similar to the above types, but made of poor material (Rhyolite). Because of this it looks rather like a stone which has been battered. But upon more thorough inspection one can make out a cutting edge, and a "back" sloping towards the "tip". It is 10.2 cm. long, up to 7 cm. wide and 5.5 cm. thick.

No. 781. The implement is almost identical with No. 690 and is also made of Rhyolite. It differs in that its "back" is flat and the slope is barely discernible. But the stone splits easily along its cleavage planes which may be the reason for the shape and flatness of the "back". Found on Site No. 6(b) RED.

No. 976. This is a very small, typical knife-like hand-axe 6.7 cm. long, up to 5 cm. wide and 4.2 cm. thick. It is made of Chert and found on Moreton Island, Site No. 61 RED.

No. 292. This implement was found on Lamb Island and is made of a piece of veined Quartzite. It is rhomboid in cross-section. The lower cutting edge is slightly concave and rather crudely retouched. The rest of the implement is hardly worked at all. It is 10.8 cm. long, up to 6.1 cm. wide and up to 5 cm. thick. Found on Site No. 53 BEEN.

* * *

The rest of the implements in this sub-group are similar to the above described except for two which need separate mention.

No. 550. This is a pebble of Rhyolite (Cape Moreton) with quite a lot of the original cortex still remaining. Only the cutting edge is retouched, mainly on one side, the crude notches giving a serrated effect. Since the "back" and butt are unknapped there is hardly any sloping line. The implement could have been used as a scraper and thus called a chopper-scraper (Plate XIII, Fig. 3). It is 9 cm. long, 6.8 cm. wide and about 3.5 cm. thick. Found on Site No. 6 RED.

No. 351. This implement was found on Site No. 14(a) TAMB. on South Stradbroke Island. Its interest lies in the fact that it was made from a piece of broken grind stone and no more than three blows were used to make a cutting edge. Almost certainly made in a hurry. The stone material was Quartzite and it is 12.5 cm. long, up to 9.5 cm. wide and up to 5.2 cm. thick.

* * *

II. Cutting Implements

In this category of cutting implements, or those which are primarily cutting implements, I have put all those which have a sharp elongated blade and which are sufficiently long to be held in the hand while cutting an object. These implements can be divided according to size into two large sub-groups (a) massive (b) small. The latter can be further divided into knives and cutters. There are also several implements whose purpose is not quite clear. They could be scrapers, but they have a noticeably elongated sharp blade.

(a) Massive Knives

This type of implement is very close to the sub-group of Knife-like Hand-axes described above in Chopping Implements. They are also roughly trapezoidal in section with the cutting edge forming the more acute angle. As was said earlier, this type of implement is to be found in large numbers in the Moreton Bay area, especially on South Stradbroke and Moreton Islands. The similarity between these two types of implements is so great, that at times it is difficult to decide to which of the two sub-groups the implement belongs. I have been taking the cutting edge of the implement as the decisive feature in distinguishing between the two types. The massive stone knife has a cutting edge which is sharp and straight or almost straight. The knife-like hand-axes have either a blunted edge or else one that is not straight but somewhat zig-zagging in line. It would be difficult to cut with such an edge and it would be much more suitable for chopping. Also, the massive stone knives are usually slimmer and the butt end is not crudely knapped but is usually rounded or oval in shape. In all, I collected 24 implements of this type.

Typical of the implements in this sub-group is massive stone knife No. 169. It was found on Site No. 25 BEEN., North Stradbroke Island and was made from a piece of Quartz. The implement is 9.5 cm. long, up to 6.2 cm. broad and 3.5 cm. thick (Plate XIV, Fig. 1). It is quite thin in cross-section, worked on both faces, but the work on one face is much better than on the other. Because of this it is not symmetrical in cross-section. The cutting edge is sharp and straight; the tip is not pointed and the "back" rather crudely knapped. The butt end, to be held in the hand, is finally retouched by the percussion method.

No. 230. This is an implement which could be classified either as a massive stone knife or a knife-like hand-axe. Found on North Stradbroke Island, Site No. 65 BRISB., it is made of Quartzite. It is crudely flaked and the butt is sloped by a couple of blows. It was put in this category only because it has a sharp, straight cutting edge. It is 10.5 cm. long, 6.1 cm. wide and up to 4 cm. thick.

Typical of this group but slightly different in appearance is No. 1075, found by Mr. John Clegg on Site No. 70 BRISBANE., North Stradbroke Island. Slightly smaller in size, it is 8.6 cm. long (cutting edge 6.4 cm. long), 6.3. cm. wide and up to 4.2 cm. thick. The butt end is rounded and very well worked. The forepart is sharply angled. The cutting edge is straight and very well retouched on both faces by the percussion method (not pressure). (Plate XIV, Fig. 2.)

Similar to this knife is No. 691, found on Site No. 25 RED., Moreton Island. But this implement is thinner and less symmetrical. The butt end is not so well finished, but the blade is well retouched. Some of the retouch may have been done by pressure flaking while held in the hand. The implement was made of Quartzite.

No. 549. Found on Site No. 6 RED., Moreton Island, this is another type within this group. The implement is rather flat being only 2.8 cm. in its thickest part, 7.3 cm. long and 6.8 cm. wide. It was made of Chert. (Plate XIV, Fig. 3.)

No. 827. This is an implement of the stone knife type. Although quite thick, this knife is smaller than others of its type, being 6 cm. long, 4 cm. wide and 3.2 cm. thick. The cutting edge is well retouched on both faces by the percussion method and the sides are symmetrical. The implement is made of Milky Quartz and was found on Site No. 1 RED., Moreton Island.

No. 761. This implement is of interest because one side of the blade is polished and it is the only implement found on Moreton Island bearing traces of polishing. The opposite margin also forms a cutting edge. It is possible that the implement is incomplete. Work was commenced on the implement while it was still part of the nucleus; but the polishing was done after the separation from the nucleus. It was made of Cape Moreton Rhyolite (Plate XIV, Fig. 4).

Of special interest is massive stone knife No. 658 found on Site No. 16 RED., Moreton Island and made of Cape Moreton Rhyolite. While one margin forms a cutting edge, the other is serrated, having three teeth. There is no well-defined "back" on this implement.

No. 828. This is a typical massive knife - but with only a few flakes taken off in making it. It could be taken for an ordinary piece of stone if it was not for the visible traces of a cutting edge worked on it.

The rest of the implements in this group are like the above described varying only in a few minor details.

* * *

(b) Small Knives

These implements are usually in the shape of a fairly thin flake of stone, elongated and with one and sometimes two cutting edges. The tip can be either sharp or blunt. The butt end is often, but not always, suitable for hafting. Scraper-type knives were usually held in the hand. There is also the elongated but thick type of knife, which has both margins worked. In all, the types of smaller knives are many and varied. It is interesting to note that the majority of implements of this type were found on Moreton Island.

No. 631. Found on Site No. 4 RED., Moreton Island, this implement stands half-way between the massive stone knife and the ordinary knife. It has a butt end and a "back", as if meant to be held in the hand, like a massive stone knife or a knife-like hand-axe. It is 6.7 cm. long, up to 4 cm. wide and 2.3 cm. thick. The retouch could possibly have been done by pressure flaking. Made of Opaline Chert, this implement could also have been used as a scraper (Plate XV, Fig. 7.)

No. 847. This is a very good example of a knife, and is made of Chert or fine-grained Quartzite. It was found on Site No. 46 RED., Moreton Island. The implement is well retouched, almost certainly by pressure flaking and is almost crescent shaped. The butt end is clearly worked to be attached to a handle. The cutting edge is straight and the "back" is curved. The knife is 5.5 cm. long, up to 2.5 cm. wide and 1.2 cm. thick (Plate XV, Fig. 2).

No. 594. This implement is similar to No. 847 above, but is not so well made. Here too, the butt end is suitable for hafting. Found on Site No. 3 RED. and made of Quartz(?). The type is characteristic of Moreton Island (Plate XV, Fig. 3).

No. 967. This knife is similar to the one described above, but is considerably larger, being 8 cm. long, 4.2 cm. wide and 1.5 cm. thick. Found on Site No. 1 RED., it is made of a piece of Andesite(?).

No. 858. This knife has a crudely sharpened tip which curves upwards. The cutting edge is straight and well retouched by pressure flaking. The implement was probably held in the hand and not hafted. It is 7.4 cm. long and 3.8 cm. wide (Plate XV, Fig. 4).

No. 1051. This knife is quite like No. 858 but not so well made. The tip points upwards and the cutting edge is not quite straight. Made of Quartzite, the knife has seen much use and the tip of the point is broken off (Plate XV, Fig. 5). Site No. 3 RED., Moreton Island.

No. 568. This knife was found on Site No. 11 RED., Moreton Island. This is a multi-purpose implement and could have been used for cutting and scraping. Made of a piece of Quartzite, it is elongated in shape and has two sharp points worked on it for special cutting, such as cutting skins. It is very well retouched by pressure flaking but on one face only. Made of Quartzite, it is 5.5 cm. long, 4.1 cm. wide and 1.2 cm. thick (Plate XV, Fig. 6).

Nos. 758/759. These are two pieces of an implement found on Site No. 30 RED., Moreton Island. They are of interest because they seem to be "true blades", which are rare in my collection. One face is pressure flaked. The blade is probably also the result of pressure flaking. Made of Quartzite (Plate XV, Fig. 8).

No. 1053. This knife is an elongated piece of Opaline Chert - 6.5 cm. long, 2.8 cm. wide and 1.5 cm. thick. It was found on Site No. 3 RED., Moreton Island. This specimen has two opposing cutting edges, one of which is curved. The percussion work on it is extremely good. Both ends of the knife are blunted (one end could have been broken off). There are no indications of hafting. Since we have other knives similar to this, also from Moreton Island, from Sites Nos. 23 and 10 RED., we might presume that this knife is typical of Moreton Island (Plate XV, Fig. 1).

All the other knives collected are similar to the types described above.

* * *

(c) Cutters

I am putting all cutting, or mainly cutting implements which because of their shape and size cannot be called knives into this category. Several of them may have been hafted but the majority were almost certainly held directly in the hand.

Amongst the so-called "semi-implements" there are many small flakes which could have been used as cutters. Because of their simplicity, many types of cutters are to be found. The following is a list of the main types.

* * *

No. 595 and No. 884 may be called knife-like cutters.

No. 595. This is a thin, flat flake of Chert, 5.5 cm. long. It has a straight cutting edge and a curved "back". The butt end does not fit into the palm of the hand, but has been worked by pressure flaking for attachment to a handle. The retouch is uni-facial. It was found on Site No. 3 RED., Moreton Island (Plate XVI, Fig. 1).

No. 884. This implement is similar to No. 595 but has an unretouched "back". Although the butt end is worked, there are no signs to indicate it was meant to be hafted. It could have been held by the thumb and third finger with the index finger pressing down on the "back". The cutting edge only, is worked by light percussion blows. The implement is made of Quartz. Found on Site No. 48 RED., Moreton Island and is 5.5 cm. long (Plate XVI, Fig. 2).

No. 234. Found on Site No. 66 BRISB. (North Stradbroke), this is a flat flake of Quartzite. One face of the cutting edge is worked by what is almost certainly pressure flaking - the other face has very little retouch. The cutting edge is not straight, but curves upwards to a sharp point. There are no indications that it was hafted. This implement must be quite old as it is covered with patina (Plate XVI, Fig. 3).

Tall Chisel-like Cutters

Implements Nos. 1055 and 1056 can be ascribed to this category of "tall chisel-like cutters". Both were found on Site No. 3 RED. (Moreton Island).

No. 1055. This is a very well made implement from a thin flake of Chert. It is worked on both faces by pressure flaking (?). It is broad at its working end and narrow at the butt end, which was almost certainly inserted into a handle. This implement is like a knife or rather, a bootmaker's cutter. It is 4-4.2 cm. high (Plate XVI, Fig. 4).

No. 1056. This implement is similar in shape to No. 1055, but more crudely made. Its butt end and "back" are not worked. The cutting edge is worked on one face only (Plate XVI, Fig. 5). Quartzite.

It is interesting to note that both implements are from the same site, so this type of implement could be presumed common to the inhabitants of the site.

* * *

The following are cutters of especial or unusual shape.

Cutter-Scraper No. 420. Found on Site No. 41 TAMB. (mainland), this implement is made from a flake of Jasper. It is 5 cm. long. It could have been included with the scrapers if its shape was not like that of a massive hand knife, sloping towards the tip and straight at the butt end (unless this butt end was broken off during its manufacture). In any case, the index finger would have pressed on the "back" while the middle finger and thumb held it at the sides with the fourth finger probably against the

butt end. Both faces were almost certainly worked by pressure flaking. The cutting edge is slightly curved (Plate XVI, Fig. 6).

Chisel-like Cutter No. 395. This implement is similar to the chisels which will be described later, but much longer in size. Although it could have been used as a chisel, it was more likely a cutting implement. From the working on its butt end, it was almost certainly hafted. The working is by pressure flaking and mainly on one side (Plate XVI, Fig. 7). The cutting edge is in the shape of a wide angle (the point being in the centre of the blade). So the centre of gravity, and the pressure while working would have been on this angular point. This implement would be suitable for cutting hides. It is 4.6 cm. long and 3.6 cm. "high" from the point on the blade. Found on Site No. 41 TAMB., it is made of Jasper.

No. 778. This is a large cutter found on Site No. 6 RED. (Moreton Island) and is made of Cape Moreton Rhyolite. It is only called a cutter with reservations, and in shape and size is reminiscent of a massive stone knife.

* * *

III. Stabbing and Jabbing Implements

Stabbing and jabbing implements take the form of spearheads or daggers. They are often very similar in appearance and hence difficult to separate into two categories. The former were attached to long pieces of wood with the aid of vegetable or mineral pitch. The latter were attached to a short wooden handle by the same means. Often just a lump of pitch attached to the butt end of the implement, served as a handle.

There were few implements of this type found in the area I investigated. Six examples on Moreton Island, one on North Stradbroke Island and one on Russell Island i.e. eight in all. Seeing these are so few in this group, I will list all.

No. 557. This implement may be called typical. This is probably a dagger, though quite a short one. It is a flake struck from a nucleus by a sharp blow. The striking platform is blunt and the tip pointed. The raw material is Cape Moreton Rhyolite quarried near the site where the implement was found (i.e. Site No. 8 RED. in the Northern part of Moreton Island). The flake is 9.5 cm. long, up to 5 cm. wide at the butt and 2.2 cm. thick. Two blows prior to striking the flake produced the two slopes towards the margins of the outer face. Retouch is confined to the butt end, thinning it down for hafting. It could also have served as a spearhead. The implement does not appear to have been used. In F.D. McCarthy's The stone implements of Australia, this implement is called a Leilira Blade (Plate XVII, Fig. 1).

No. 310. This is another Leilira blade found on Site No. 64 BEEN., Russell Island. The cutting edges are badly notched. This could have been a result of its long use; but it is possible that some of the notches are recent since truckes and farming machines constantly pass over the site. The butt end of the blade is not retouched as was the preceding implement. But as the blade itself is quite thin it could easily have been hafted. There is a trace of a blow on the butt end. Because of its similarity to No. 557, I have called this implement a dagger. It is 8 cm. long, up to 4.5 cm. wide, and 1.6 cm. thick. It is made of coarse-grained Quartzite (Plate XVII, Fig. 2).

No. 114. This is an implement from Site No. 50 BRISB., North Stradbroke Island and is made of Quartzite (?). In type it is similar to the two preceding implements but is almost unworked. The outer face still retains the original cortex, while the bulbar face is plain. Only the butt end has been worked and thinned down, just like No. 557, for easier hafting. It is 8.8 cm. long, up to 6.5 cm. wide and 1.8 cm. thick. This implement has certainly been much used as there are quite a few indentations on the blade edges.

No. 598. This is an implement which I consider is almost certainly a spearhead, although close to the preceding implements in technique. Found on Site No. 3, RED., Moreton Island, it is made of a better quality material than the above mentioned (Quartzite). It is 9 cm. long, 6 cm. wide and 1.8 cm. thick. The extremely broad butt end, combined with its failry short length, suggests that it is probably a spearhead, although it could have been a very short dagger. It is worked by 7 or 8 blows struck downwards from the butt end. The work, as with No. 557, was done before striking the flake from the core by a hard blow. The implement was almost certainly used, since the tip of the sharp point was broken (Plate XVII, Fig. 3).

No. 613. This is a spearhead made of the same type of Rhyolite as was No. 557. It was found on Site No. 3(a) RED., Moreton Island and is 7 cm. long, 4.5 cm. wide and up to 2.1 cm. thick. It differs from the preceding implements in that in comparison with its thickness, it is very short. It could not have been used as a dagger, which is why I am calling it a spearhead. As with the preceding implements, it has been worked on one face only. The butt end has been retouched and thinned for attachment to a spearshaft (Plate XVII, Fig. 4).

No. 731. Found on Site No. 25 RED., Moreton Island, this implement is made of Quartzite. It differs from the preceding implements in this group (No. 557 etc.) in that all the retouch is on the bulbar face. The outer face still retains the original cortex, apart from the scar of one flake taken off at the butt end. This may have been done to make the implement thinner

at the butt, but it could also be a scar from a flake struck from the nucleus earlier on, in the making of some other implement. The retouch on the bulbar face is crude, so it can be seen that while the other implements in this group were worked before being struck from the nucleus, this flake was first struck off and then worked. Thus we have another type of implement in this group. It is 6 cm. long, up to 4 cm. wide at the butt and 1.9 cm. thick. I consider this to be a spearhead rather than a dagger (Plate XVII, Fig. 5).

No. 904. This is a spearhead made of semi-Opal, found on Site No. 46 RED. (Southern end of Moreton Island). This is a broken implement. Just like dagger No. 557 only one face has been worked; but it differs in that it has a fine retouch by light blows and pressure flaking (?) all along the margins. The sharp point and the butt end are broken off. Most probably the spearhead was not very large - the remaining part is 4 x 3 cm. which is why I think it was not a dagger (Plate XVII, Fig. 6).

No. 745. This is also either a broken dagger or spearhead made of Quartzite, a poor, breakable type of raw material. At some time it has been exposed to fire. It too, was worked on one face only, but it differs from the earlier examples in that its point is rounded and it is narrower in width. The part remaining is 3.5 x 2.3 cm. It was found on Site No. 25 RED., Moreton Island.

Thus in this group we have two types of technique (1) work on the future flake or blade prior to striking it from the nucleus (No. 557 et al.) (2) retouch of a flake already struck from the nucleus (No. 731 et al.).

* * *

IV. Scraping Implements

The so-called "scrapers" can be found in large numbers on Moreton Bay sites, especially on Moreton Island. There are 130 examples in my collection, not counting several which could have had a dual purpose and are included in another group. Some are semi-implements.

They vary so much in appearance that it is difficult to divide them into sub-groups - but I have made the following attempt:

(1) Massive scrapers (two types)

(2) Scrapers on thin flakes (worked on one face only - appearance varies)

(3) Scrapers worked on both faces

(4) Small thick nucleus-like scrapers

(5) Beak-like scrapers

(6) Three-sided scrapers

(7) Blade-like scrapers ("Lames").

(1) Massive Scrapers

There are not many of these implements. They are quite large and there are two types. These implements could have been to make a wooden surface smooth and flat - so could probably be called "planes".

First type has working edge and the butt end at right angles to the long axis. This butt end could have served as a hand grip. These implements are usually crudely worked.

No. 182. This implement was found on Site No. 23 BEEN., North Stradbroke. It is a piece of Quartz 7.3 cm. long from its working edge to the butt; 4 cm. wide at the butt end; 5.5 cm. wide at the working edge and up to 4 cm. thick. It is somewhat reminiscent of a transverse axe-head. One face only has been worked by crude flaking (Plate XVIII, Fig. 1).

No. 727. Found on Site No. 3, RED., Moreton Island, this implement is similar to No. 182 but more crudely worked. This is a piece split from a pebble of Spherulitic Rhyolite and still retains the original cortex on one face. The working edge is only slightly worked and in contrast to the other examples, the work is on the flat bulbar face.

Another type of massive scraper is represented by No. 633, found on Site No. 4 RED., Moreton Island. This is a piece of flat pebble of Chert, one face of which has been retouched to give a completely flat working surface. The margins are retouched at right angles to this surface. There is what seems to be a deliberately left sharpish projection at one end, possibly to be gripped between the middle and index fingers to prevent the implement from slipping when held. It is 8.5 x 5.8 x 3 cm. in size. Retouch is by percussion.

* * *

(2) Scrapers on Thin Flakes

Worked on one face only, this is the most common type of scraper. The shape is mostly dependent on the raw material. In some cases the working edge is serrated while in others the edge can be smoothly retouched. Except for a certain type found on the

mainland, these scrapers are usually roundish in shape. Examples of typical scrapers would be No. 596, No. 635, No. 1008 and No. 1037.

No. 596. This scraper is quite small - 3.8 x 3 cm. It is made of a thin flake of Opaline Chert and was found on Site No. 3 RED., Moreton Island. It is retouched on all sides except for one part which was probably broken off. Retouch was done by the percussion method. This implement is quite old as it is covered by patina (Plate XVIII, Fig. 6).

No. 635. This implement is made of Quartzite and was found on Site No. 15 RED., Moreton Island. It is quite large, being 7.1 x 6 cm. in size. One end looks as if it had been deliberately elongated. The retouch is by percussion (Plate XVIII, Fig. 5).

No. 1008. This is a very thin flake (0.8 cm. thick), slightly elongated and rounded in shape and now broken into two pieces. The large facets of retouch show the work of a very skilled craftsman. Found on Site No. 9 RED., Moreton Island. (Plate XVIII, Fig. 3.)

No. 1037. This is a rounded flake of Quartzite. But because of careless workmanship the working edge is very uneven. Only one face of the working edge has been retouched (Plate XVIII, Fig. 4).

* * *

A certain type of scraper was found on Sites No. 50 and No. 52 TAMB. on the mainland. These are very large flakes, which when looked at from the side, have a smooth, even knife-like cutting edge. But when looked at from below, the cutting edge is slightly concave. They were probably used for scraping hides or curved wooden objects.

No. 496. Found on Site No. 52 TAMB. (Coomera River), this is a slightly curved flake of Cherty Jasper, 7.8 x 6.9 cm. The cutting has only a few traces of retouch. Bears traces of use. (Plate XIX, Fig. 1.)

No. 450. This scraper was found in the Coombabah Lake area, Site No. 50. It looks like the preceding one, but the cutting edge and side margins are well retouched. The implement was made of Chert.

* * *

Small Scrapers Worked on Both Faces

These give the impression of being thick flakes, but this is only because of their small size. Two types of these scrapers were found. Those which were held directly in the hand and those which, almost certainly, were attached to a handle. They could also have been used as chisels.

An example of the first type is No. 159 from Site No. 36 BEEN., North Stradbroke Island. It is made of Quartzite and is 4.5 x 3.8 x 1.8 cm. Percussion retouch runs almost all round the margin; only a small section at the butt end remaining unworked and retaining the original cortex. The opposite end is rather like a chisel edge, but since the butt end is quite thick and unsuitable for hafting, it has been classified as a scraper. The implement is covered by patina which indicates that it is of some antiquity (Plate XIX, Fig. 5).

No. 1024. This is another type of scraper, clearly suitable for hafting, since the part opposite the working edge narrows down into a slender "neck" which was easy to insert into a handle. It could have been a chisel, but the edge seems rather too thick for this and thus more suitable for scraping. It is made of Opaline Chert and is 3.6 x 4.2 x 1.5 cm. and was found on Site No. 3 RED., Moreton Island. The retouch is probably by percussion. There are quite a few such scrapers with "shoulders" and "neck" in my collection. (Plate XIX, Fig. 4.)

* * *

Nucleus-(Core-)like Scrapers

These scrapers are not symmetrical in cross-section. One face is flat while the other is quite domed. They need not have been nuclei, since the flakes from them are very small. And as was said earlier, microlithic implements have not been found here.

No. 683. This implement is worked on all sides by pressure flaking, probably mostly done while still on the nucleus. When split from this, it was finally retouched on the edges. It looks like a small nucleus. Two large flake scars on the sides of the implement allow it to be held firmly by three fingers (the third finger along the flat bulbar face). But it could also have been hafted. Made of Wood Opal (?) it is 3.5 x 3.5 x 2.4 cm. in size. (Plate XIX, Fig. 3.) This type of scraper is quite rare and we only have one example.

* * *

Beak-like Scrapers

These implements are usually grouped with scrapers, although their purpose would have been a little different - probably to scrape out fairly fine lines. Such beaked scrapers are to be found on quite a few sites.

Typical of this group is No. 479 found on the location of the destroyed Bora Ring at Alberton. It is made of Jasper and looks like a bird's head with a curved beak and a neck, which could have been attached to a handle. It is worked on both faces, possibly by pressure flaking (Plate XIX, Fig. 2).

No. 630. Found on Site No. 4 RED., Moreton Island, this implement is similar to the preceding one, but more crudely made. It also has a neck suitable for hafting.

* * *

"Blade"-like Scrapers ("Lames")

As I have previously said, "true blades", as defined in British archaeological terms, do not exist in this region.

There is one implement which we have taken as a type of "blade-like" flake. Others of this type may be used for various purposes. As "typical" of this kind, I have taken No. 1058, found on Site No. 3 RED., Moreton Island. This is a very thin flake of Opaline Chert 3.6 x 2.8 cm. It is covered by patina and bears traces of pressure flaking on its broad butt end, on which there are remains of a pressure platform. The working edge is rounded by crude retouch. It could hardly have been used as a chisel as it was too thin and would have broken. It was more likely a scraper for some special purpose. (Plate XIX, Fig. 7).

The rest of the "blade-like" flakes could possibly be accidental. Among them are some which are more like scrapers - others which are closer to chisels.

* * *

Trihedral scrapers

There are very few scrapers of this type. They are quite similar to scrapers which I used to find quite often on sites in Manchuria. Scraper No. 472 can serve as an example of this type. Found on Site No. 54 TAMB. (Jacob's Well). This is a triangular-in-cross-section, elongated piece of Quartz. 6.3 cm. long. 2-2.8 cm. in cross-section. Hardly retouched. Slightly curved along length. (Plate XIX, Fig. 6).

* * *

V. Chisels, Drilling, Piercing and Sawing Implements

This group is somewhat heterogeneous. But since there are not many such implements, it would have been too cumbersome to divide them into a separate group for each kind.

Chisels

This type of implement is fairly frequently found. By chisels, I mean small chips of stone, usually pointed at one end and which would have been attached to a wooden handle with the aid of pitch or gum. Three types have been observed in this region.

Of the first type is implement No. 422 from Site No. 41 TAMB. This is a small piece of Quartzite worked on two faces. On its lower face is an edge with a sharp projecting point in its centre. It is 2.8 cm. x 2.5 cm. x 1 cm. in size and was worked by percussion. It was almost certainly hafted (Plate XX, Fig. 1).

Implements of this type occur more often than the others.

No. 551. Found on Site No. 6 RED., Moreton Island, this implement belongs to another type of chisel. It is made of a chip of Chert, elongated in shape and probably would have held well in a handle. The edge also ends on a point. It is triangular in cross-section. The retouch appears to be pressure flaking. In size it is 3.8 cm. long, 2.7 cm. wide and 1.5 cm. thick (Plate XX, Fig. 2).

The third type of chisel is represented by No. 932, a piece of Opaline Chert 3.2 cm. x 2.8 cm. This has a blunt rounded working edge; worked on one side by what seems to be pressure flaking. The first work was done while still part of the nucleus (Plate XX, Fig. 3).

No. 933. This implement is similar to the one above, but not as long.

* * *

Drills

All implements which have a sharp point could be called drills, but the term is usually reserved for implements which have a projection in the centre of the working end; which could be used for drilling.

Typical examples are No. 879 and No. 612. Few drills were found, only eight in all.

No. 879. This implement is made of a flake of Quartzite and is broken along one side. The tip of this flake was given a working edge by pressure flaking (?). In its centre it has a sharp projection almost 1½ cm. long. The implement is 4.8 cm. long and was found on Site No. 3 RED., Moreton Island. (Plate XX, Fig. 4.)

Implement No. 612 is similar to the one above but smaller in size (Plate XX, Fig. 5).

* * *

Piercers

"Piercers" is the name I have given to small implements which have a sharp point. The edges are usually not trimmed, so these implements were not used for cutting.

Typical is No. 1022. This is a flake of Chert and is almost rhomboid (in shape). 5 cm. long and 3.9 cm. wide, it is worked on one face by pressure flaking. Two of its edges and the point of the implement are very sharp. It was found on Site No. 10 RED., Moreton Island (Plate XX, Fig. 7).

Other piercers, a little smaller in size, are No. 1067 found on Site No. 3 RED., made of Chert (Plate XX, Fig. 6), and No. 543 found on Site No. 1(a) RED., Moreton Island. Made of silicified sediment (Plate XX, Fig. 8).

Among the so-called semi-implements there are many flakes which have the appearance of piercers.

* * *

Sawing Implements

Stone saws are also included in this category. These are not many, ten examples in all.

No. 453. Found on Site No. 50 TAMB. (Coombabah Lake), this is an almost square flake of Quartzite 3.3 x 3.0 cm. Two of the four sides are working edges; one evidently served as a scraper, while the other is straight and has a very neat row of serrated teeth, making it a saw suitable for fine work. It is worked by pressure flaking on one face (Plate XXI, Fig. 3).

Another saw, No. 452 was also found on this site. It too, was made of Quartzite (Plate XXI, Fig. 4).

No. 842. This is another type of saw. It is a crudely worked flake of silicified Rhyolite, one margin of which is roughly notched making it into a saw for fairly coarse work. This working edge

is 7 cm. long and the size of the teeth at their base is 1 cm. or smaller. It was found on Site No. 43 RED., Moreton Island (Plate XXI, Fig. 5).

No. 713. This saw is similar to No. 842 but is smaller and is made of Quartzite. Found on Site No. 43 RED., Moreton Island.

* * *

VI. Crushing Implements

Into this category, I have put "pointed hand implements", percuteurs and hammers.

(1) Pointed Hand Implements

At first these were classified as "pointed hand axes", but since they would not chop, this description would have been wrong. Their purpose was to break or crush something. This type is a heavy, massive implement whose thick butt end was held in the hand and whose pointed tip was used to strike the object. Twenty examples of this type of implement were collected.

No. 311, found on Site No. 64 BEEN. (Russell Island) can be called typical. This is a rough piece of Chert still retaining some of the original cortex. One face has been worked by two or three blows. The surface of the thick butt end has two flake scars, but these could have been made before the manufacture of the tool, rather than being the result of deliberate trimming. One face of the implement is flat and has had one flake taken off it. This implement was not struck from a nucleus, nor is it a pebble. It is 7.8 cm. long, 7.2 cm. wide and up to 4 cm. thick (in the middle of the implement).

No. 36. This implement was found between Sites No. 6 and No. 21 BRISB. It is the smallest of the "pointed" hand implements and is made of Quartzite. One face is very well retouched. It was evidently not much used, although the point is a little dented. Since it is small, it was probably not held in the palm of the hand, but by the fingers; the index finger pressing on the top and the thumb and middle fingers on either side. It is 5 cm. long, 4.7 cm. wide and up to 2.7 cm. thick (Plate XXI, Fig. 2).

No. 994. This is a flat, crudely made piece of Andesite, almost unworked. One face has three scars from rough blows and the other has had one or two flakes detached. It is 10.3 cm. long, up to 10 cm. wide and up to 3.5 cm. thick. It was found on Site No. 1(b) RED., Moreton Island.

* * *

The Anthropology Museum at the University of Queensland has an implement found at Pittsworth, whose shape resembles the pointed hand implement described above. The implement, No. 4911 according to the catalogue, is identified as an instrument for knocking teeth out in initiation ceremonies. This implement bears traces of polishing and this is the only way it differs from our implements.

* * *

(2) Percuteurs (Hammer Stones)

These are usually a very hard type of pebble which were used for working implements and for striking flakes from the nucleus. They vary in size depending on the power of the blow for which they were needed (i.e. whether they were needed for fine retouch or for taking off rather large flakes). Bruising from the blows remains on the percuteurs and at times pieces were knocked off them. Work by a percuteur was done either with the aid of an anvil or with the implement to be worked, held directly in the hand. The anvils were evidently of two kinds - stone anvils and others of a more plastic nature, for instance, large bones. On the latter type anvil was done the rather fine retouch. Work without use of an anvil was done by holding the implement in one hand and striking its working edge with one of the sides of the percuteur. In this way they could chip off tiny flakes.

Thus there are two types of percuteurs, some having bruises on one face and others with bruises along the edges.

As an example we have percuteur No. 748 from Site No. 2 RED., Moreton Island. This is a pebble of Granite, 9 cm. long, 6.1 cm. wide and up to 2.5 cm. thick. This has two large grooves knocked out of one face of the pebble. It was presumably used for striking flakes from a nucleus or for rough knapping of implements, most probably on an anvil (Plate IX, Fig. 2).

No. 923. This is a small percuteur and bears traces of bruises (contra-blows) on the margin. It was possibly used for retouch of implements which were held in the hand. Found on Site No. 56 RED., Moreton Island.

Percuteur No. 943 also has bruises on the margin. It was found on Site No. 60 RED., Moreton Island.

Many large pebbles found on the sites were possibly collected for future use as percuteurs.

* * *

Hammers

Implements in a definite shape of a hammer were not found. But stones which are knapped, but are apparently not nuclei, may be called hammers. They were probably held in the hand and used for striking or crushing something. Flat pebbles, with reasonably thin edges, but which could neither be axes nor knives may also be placed in this category. They too were probably used for crushing or kneading. These have no traces of knapping.

* * *

VII. Grindstones and Anvils

In the group of Grindstones, I have included not only those used for grinding seeds or roots, but also all types of whetstones, or other stones on which objects or implements could have been ground or sharpened. In my collection there are two or three stones whose purpose was clearly that of sharpening implements and not for grinding. The rest (about 80) were almost certainly multi-purpose as were many implements of primitive man (having a variety of purposes as the need arose): they were used for grinding seeds, paints (although I did not find any traces of paints on these grindstones); sharpening implements, or they were used as chopping blocks, which explains why many of them were broken. The smaller varieties, when necessary, were used as hammers which is why some of them are bruised. The small grinders could have been used for grinding something into a powder. I have also included anvils, i.e. stones which bear traces of having had objects split or broken on them, in this group.

(a) Stones for Grinding Seeds, Roots or Paints

Typical of this group are two grindstones (No. 170(a) and No. 170(b)) made of coarse-grained Sandstone. They were found on Site No. 28 BEEN., North Stradbroke Island. One is 23 x 18 x 7.5 cm.; the second and smaller one is 14 cm. x 9.5 cm. x 7 cm. Since they were found side by side, one may presume that they constitute a pair: the lower and upper grinders. Both are oval in shape and were originally large pebbles. The larger grindstone (presumably the lower) was worn on both faces, and one face has a noticeable hollow in it. The smaller stone is worn on one surface only. They were most likely used for grinding food stuffs. (Plate VIII, Fig. 1.)

No. 246. Found on Site No. 38 BEEN., North Stradbroke, this is an upper grinder made of coarse-grained Sandstone and is worn into a triangular shape with rounded corners. From this we can see that not only the flat surface, but also the sides were

used for grinding. Its size is 12 cm. x 12 cm. (length x breadth) and 7.5 cm. thick. Several such rounded triangular grindstones were found, which indicates that this one did not get its shape accidentally (Plate VIII, Fig. 2).

No. 140. This is also an upper grinder, but quite rounded in shape. Found on Site No. 29 BEEN.

See also, No. 944 (Plate VIII, Fig. 3). Found on Site No. 60 RED.

The rest of the grindstones are similar to the above described. Many are broken and only fragments of some remain.

* * *

(b) Stones on which Implements were Ground and Sharpened

In actual fact, we have only one large stone which is clearly for this purpose. This is No. 141 from Site No. 36 BEEN., North Stradbroke Island. It is a half of a grindstone of Rhyolite and was worn into an almost crescent shape (Plate IX, Fig. 1). Near one end there is a sort of groove as if for sharpening an edge, but the sides of this groove are not very worn, indicating that it was not much used. The length from the pointed end to the break is 13 cm., the height up to 11 cm. The worn surface is 9.5 cm. across.

No. 481. This is a small piece of fine Sandstone and has no clearly defined shape, but is covered with scars and worn patches. Probably used for polishing small implements, it was found near the Bora Ring at Alberton. I include it in my lists, but must add that it was found in a ploughed field and only careful investigation would determine the era to which it belongs (Plate IX, Fig. 3).

* * *

Special Grindstones for Grinding or Powdering Small Quantities

An example of this type is No. 107 from Site No. 63 BRISB., North Stradbroke Island. This looks like a normal upper grinder, but is of small proportions. Only part of it remains. It is 5.5 cm. wide, up to 3 cm. "high" and the length is unknown because it is broken. It is made of igneous rock.

No. 174. Found on Site No. 23 BEEN., North Stradbroke Island and made of coarse Sandstone, this is a small grinder, one end of which was held in the hand and the other used for grinding. The grinding surface is not very large. Its size is 4.7 cm. x 2.5 cm.

Only very small portions could be ground by such an implement, possibly paints, although there are no traces of this left (Plate IX, Fig. 4).

No. 139. Found on Site No. 28(a) BEEN., North Stradbroke Island, this is of the same type as No. 174, but the worn grinding surface is very small (3.8 x 1.2 cm.), since the pebble from which it is made is quite flat. It is made of Sandstone.

* * *

Anvils

These are simply pieces of stone with coarse-grained pitted surfaces which have small dents in them caused by having had objects broken on them. The pitted surface stopped the object being worked from slipping while the blows were being struck. There are only three or four such "anvils" with clear traces of work on them. But almost certainly many stones found on the sites, as well as most grindstones were used as "anvils" at some time or other.

* * *

VIII - IX. Semi-implements and Nuclei

These groups will be only briefly mentioned. Semi-implements is the name I have given to all types of stone chips, flakes and blocks, which because of their shape could have been used as implements, although there are very few or no signs of their having been used. The majority of them look like scrapers, cutters and piercers. But they cannot really be classified into groups.

Nuclei deserve more attention, since sometimes one may discover from them the method used by the craftsman in his work. But the majority of nuclei gathered in this region are simply stones bearing traces of having had some flakes struck from them. It is rare to find nuclei which are knapped in several directions and on several sides. But even then there is usually no systematic process or pattern noticeable. Pieces were flaked off from convenient places.

* * *

X. Other Implements and Objects of Interest

The objects collected in this group are in no way linked with each other as far as their work purposes are concerned.

(1) No. 399 is an interesting little implement which deserves to be mentioned. It is made of coral; the top part of a branch of coral having been ground down to an angle at the bottom. The dimensions are 4 cm. x 2.3 cm. x 1.2 cm. The length of the ground surface at the bottom is 3.1 cm. It is found on Site No. 41 TAMB. (near Paradise Point). (Plate XXI, Fig. 6.) Its purpose is not clear; it could have been a small grinder in which case its shape is accidental. (While excavating the skeleton of a Rhinoceros Tichorhinus*, in Manchuria, near Harbin, two implements of the same outward appearance were found. But they were made of bone and were larger.) But it is risky to make any comparisons until further such implements are found.

(2) The so-called "draughts". In the description of the sites I mentioned finding small, flat rounded pebbles on several sites. On Site No. 1 TAMB. (South Stradbroke), eight such "draughts" were found in an area of about 1 foot in diameter. From this one may conclude that they were collected and put there and did not just occur on the site naturally. They could have been for some game, or possibly had some other significance.

(3) Flat Pebbles (Buttons)

These are two similar flattish pebbles like those above, but with two small grooves made opposite each other on the sides, as if to make it possible to tie them to some sort of string. They could have been used as "buttons" as if for attaching or holding some object, tied on a cord, onto a belt. But they could also have been ornaments or been used for some ceremonial purposes.

(4) No. 517. This is a piece of coarse Sandstone ground into the shape of a flattened sphere. It is 4.2 cm. in diameter and 2.5 cm. high. It was found on Site No. 21 BRISB., North Stradbroke Island. Its purpose is not clear. It could have been the same as that for the "draughts".

Finally I wish to mention that pieces of red ochre were found on some of the sites. Particularly interesting is a piece of red ochre registrered as No. 257 and found on Site No. 41 BEEN. (North Stradbroke Island). It is worn in many spots and has a series of long and short grooves scratched in its surface by some sharp implement; probably for obtaining only small portions of the paint. These grooves do not form any regular pattern (Plate XXI, Fig. 7).

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*Jernakov, V.N. and Ponosov, V.V. 1958. Discovery of a fossil rhinoceros in Panlachengtze near Harbin. Peking: Vertebrate Palasiatica.

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Upon concluding my description of the sites and stone implements of the southern region of Moreton Bay, I would like to express my sincere thanks to the Australian Institute of Aboriginal Studies for making the funds available for this investigation and to Professor D.W. McElwain, Dr. D.J. Tugby, Mr. F.S. Colliver, Mrs. L. Haglund-Calley, Mr. J. Clegg, Miss M. Kravchenko and all members of the staff of the University of Queensland who were of invaluable assistance to me in my work. My thanks also to all friends at Tangalooma, North Stradbroke Island, Russell Island, Macleay Island and other places for all their willing help and information, which greatly aided me in my expeditions.

V.V. Ponosov.

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